

THE IRON AGE

Published every Thursday Morning by David Williams Co., 14-16 Park Place, New York.

Vol. 83: No. 13. New York, Thursday, April 1, 1909.

\$3.00 a Year, including Postage.
Single Copies, 15 Cents.

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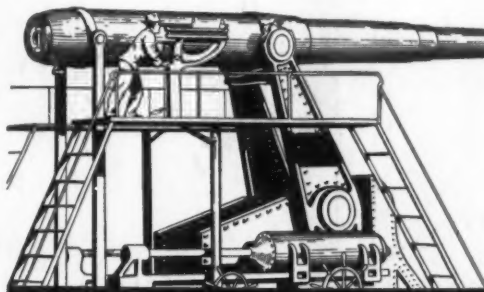
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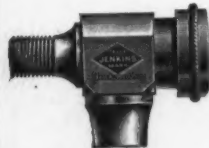
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THE IRON AGE

B

New York, Thursday, April 1, 1909.

The Greatest Steel Plant in the World.—III.

The Gary Steel Works and Rail Mill of the Indiana Steel Company, Subsidiary of the United States Steel Corporation.

19

The pouring of the first heat from the open hearth furnaces February 2 and the starting of the rail mill 15 days later on its initial rolling order, signaled the entrance of the new Gary plant into the ranks of producers of steel and finished product. This event marks the first step in a plan, the final realization of which will not only include the installation of additional blast furnaces

set at an angle of 35 degrees with the main north and south trunk lines. This arrangement, which is an innovation in such construction, greatly facilitates the speedy transfer of hot metal from the blast furnaces, from which it is taken direct to the mixers on ladle cars in 40-ton ladles.

Of the six basic open hearth buildings with 14 fur-

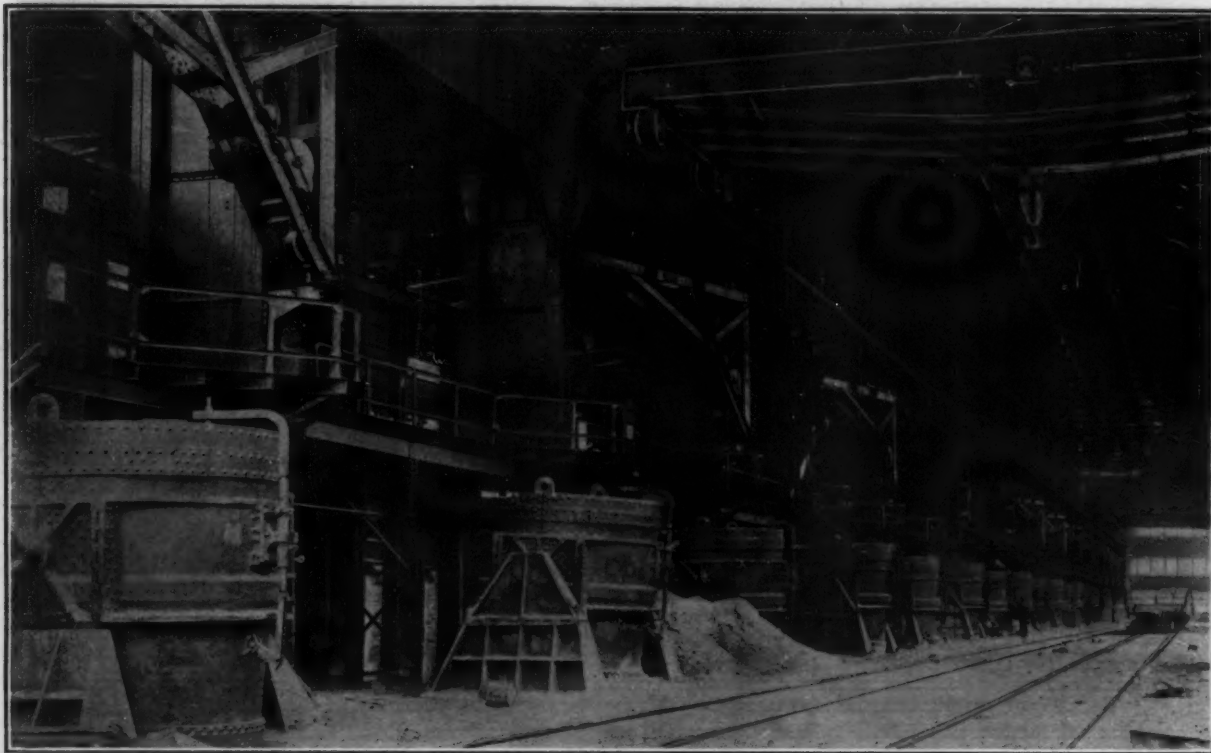


Fig. 1.—Interior of One of the Six Open Hearth Buildings of the Indiana Steel Company.

and power plants referred to in the previous articles of this series printed in *The Iron Age*, but will also include the construction of a billet mill, sheared and universal plate mills, axle mill, merchant mills and two more open hearth plants, work on all of which is either under way or soon to be begun. The present article will embrace a general description of the open hearth furnace plant and the rail mill, which, aside from their notable size, are of especial interest in that they represent the acme of modern achievement in steel making methods and appliances.

THE OPEN HEARTH STEEL PLANT.

By reference to the plan drawing of the entire plant, which appeared in connection with the first article,* it will be seen that the open hearth buildings are ranged in a line parallel to and immediately west of the electric power stations. It will also be observed that, conforming to the scheme for obtaining easy curves in the trackage system and so economizing space, these buildings are

naces each, provided for in the finished plans, Nos. 3 and 4 are completed and foundations for No. 1 are in. No. 2 will be erected next, but the erection of Nos. 5 and 6 will depend upon future requirements; space, however, has been reserved for them on the lakeward end of the line. An interior view of one of these buildings is shown in Fig. 1.

All of the open hearth buildings are identical in construction and uniform in size, being 1189 ft. long by 193 ft. wide, with a height of 57 ft. above the ground floor. The foundations are massively built of concrete, Fig. 2 showing the preparatory work on one of the buildings. They are divided into two main spans of 83 ft. and 65 ft., occupied by the charging floor and tapping and pouring tracks, respectively, with a lean-to of 45 ft. on the side containing three tracks for stock storage. The buildings are grouped in pairs, with a scrap yard and skull cracker structure between each pair. Owing to the angular alignment of the houses one of each pair over-

* Issue of January 7, 1909.

K.T. Aug. 09.

laps the other about half its length. In Fig. 3 is shown a portion of the plan of one of the open hearth buildings, which is typical of the general arrangement. Fig. 4 is a cross section through the building.

Two 300-ton mixers are installed in a building 86 x 120 ft. at the north end of each open hearth building, entered by two tracks. Figs 5 and 6 show the plan and section of a mixer building. The ladles of hot metal are

to be charged in 60-ton ladles on an electrically operated hot metal car.

A 75-ton crane, of which there are two commanding the charging floor, picks the ladle up from the car and carries it across to the open hearth into which its contents are poured through a runner, handled by a low type Wellman-Seaver-Morgan charging machine. This method of hot metal transfer from mixers to the open hearths

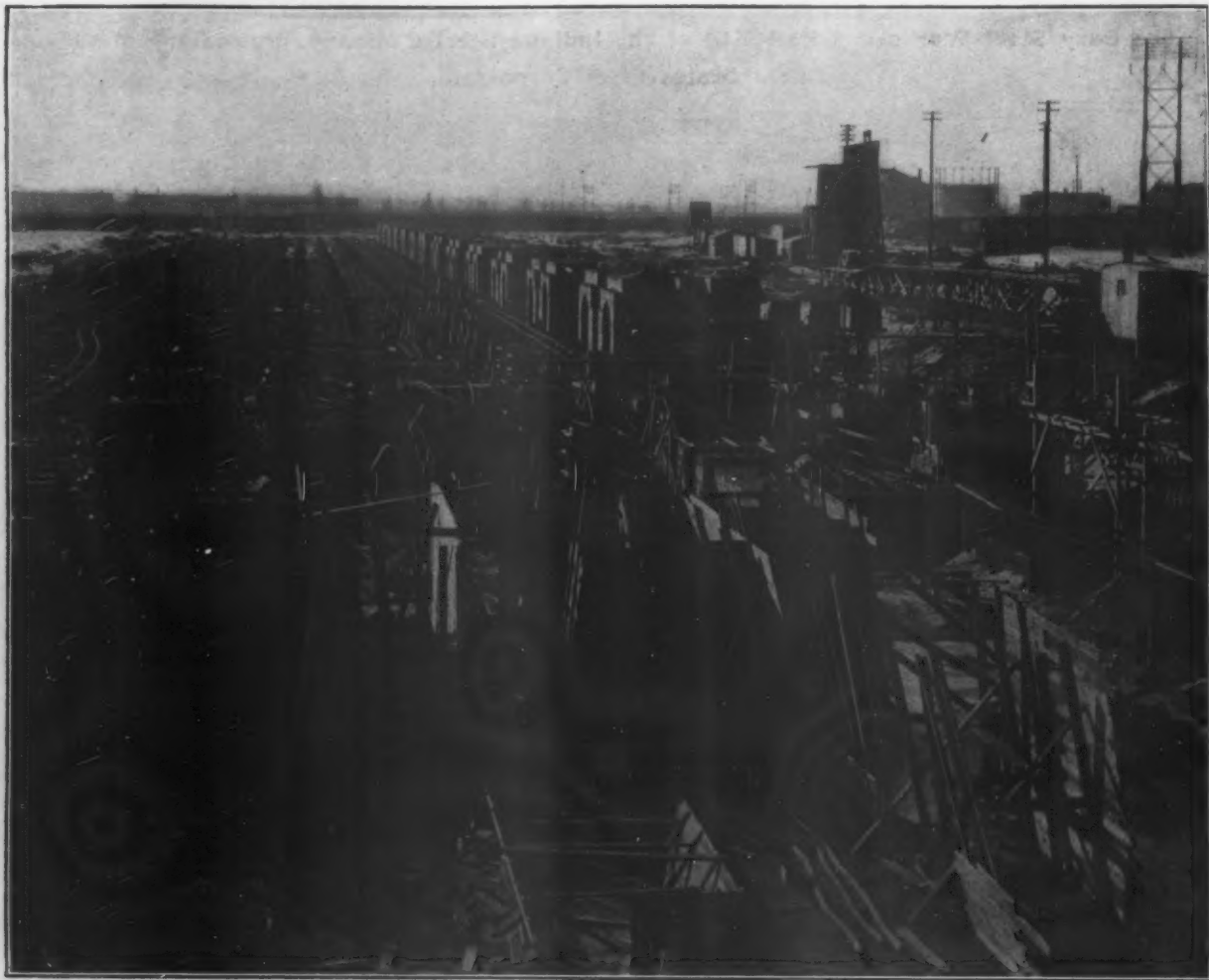


Fig. 2.—View of Preparations for the Foundation of One of the Open Hearth Plants.

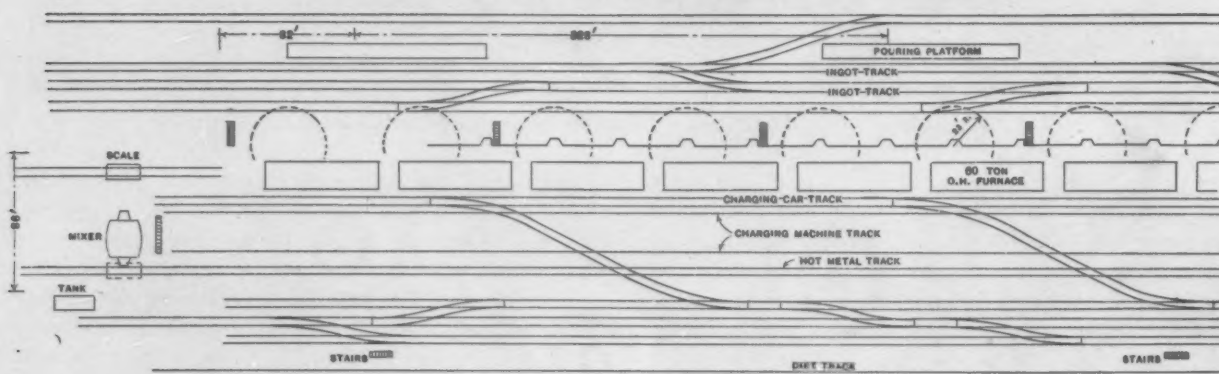


Fig. 3.—A Portion of the Plan of One of the Open Hearth Buildings, Which Is Typical of the General Arrangement.

hoisted from the trucks by a double trolley crane, having a main hoist of 75 tons capacity, with a 15-ton auxiliary for tipping and pouring into the mixers. The latter are of usual construction, rolling in a cradle frame to pour into the charging ladles on the opposite side. One of the two standard gauge tracks which parallel the furnaces extends along the opposite side of the steel charging floor into the mixer building, and metal is carried over it from the mixers to a point opposite the particular furnace

is favored for the reason that, while equally expeditious, it affords less opportunity for casualties that are encountered in all crane handling.

On the tapping side there are two ingot pouring tracks and one slag track spanned by three 125-ton ladle cranes, each carrying two auxiliary hoists. In No. 4 open hearth plant, now in operation, 80-ton ladles are placed in stands under the tap to receive the steel, being handled in and out and carried to the ingot pouring

stands by cranes. In the buildings yet to be equipped 100-ton ladles will be used. Provision, however, is made for an additional track between the slag track and furnaces, so that, if desired, it can be arranged to fill the ladles on trucks.

A convenient means of charging ferromanganese into the ladles from the tapping platform has been devised which obviates the necessity of shoveling it in by hand. It consists of a steel chute, into which the required charge is placed, the feed being controlled by a gate operated by a long rocker arm lever. Instead of being thrown in by shovelfuls the ferro is evenly distributed through the metal by a well regulated flow of the material; the operator is also enabled to perform his work at a safe distance from the hot metal.

The Design of the Open Hearth Furnaces.

The furnaces themselves, as will be seen from the drawings, Figs. 7 and 8, are not materially different

furnace door mechanism is under consideration for the future plants. A feature of advantage in such a system would be the elimination of trouble arising from frozen water pipes in hydraulic installations.

In conjunction with the open hearth furnaces are three stripper houses, Nos. 2 and 3 being already in service, while No. 1 has not yet been built. Nos. 2 and 3 are opposite and closely adjacent to the soaking pits of the rail mill and billet mill, respectively. One of these buildings is equipped with one, and the other with two, 200-ton electrically operated stripper cranes.

The adoption of the hot metal method of recarburization in these works while not new in theory at least, is interesting because of the extensive scale of the operation here employed. With two mixers available, one may be used as a receptacle for recarburizing metal of desired analysis. Thus far, however, the iron used has been high enough in grade to permit the recarburizing

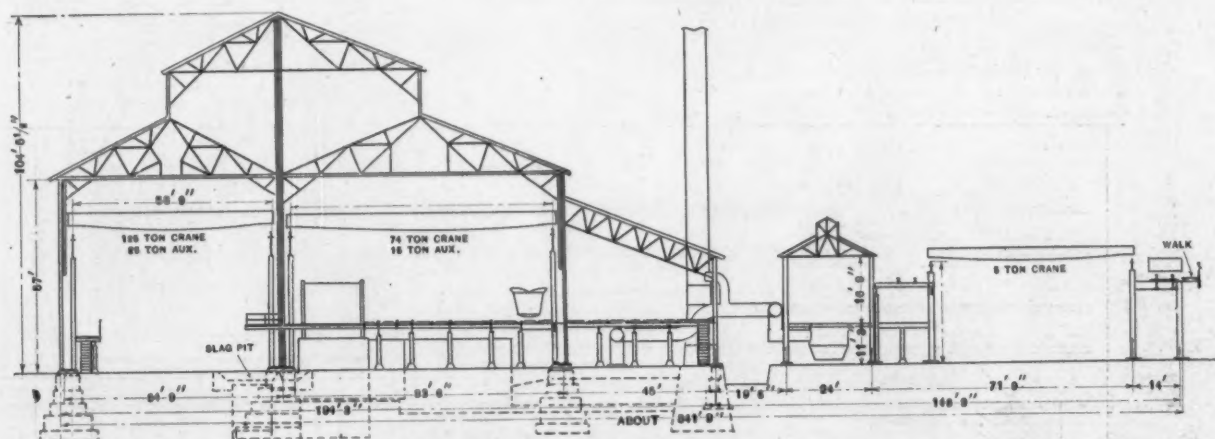


Fig. 4.—Cross Section of Open Hearth Plant.

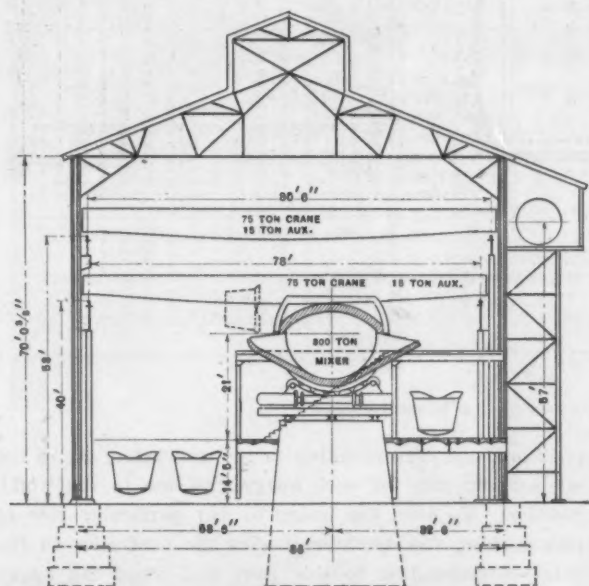


Fig. 5.—Cross Section of Mixer Building.

in design and construction from the generally approved type in modern basic open hearth practice. They are substantially built and have a hearth area of 16 x 36 ft. The combined checker work in the air and gas regenerative chambers on each side measures 5057 cu. ft., or nearly 100 cu. ft. per ton of metal in the hearth at a rated capacity of 60 tons.

In the furnaces already built the doors are operated by hydraulic power; but in furtherance of the general plan to use electrical motor power appliances wherever possible to do so advantageously, electrically operated

charge to be drawn from the one mixer in use. In the steel that has been made, the results have been highly satisfactory.

When the 56 open hearth furnaces in the four buildings which comprise the immediate plans of construction are in operation, the plant will have a monthly capacity of 225,000 gross tons, or about 2,700,000 gross tons of steel per year.

The Gas Producers.

Fuel is supplied to the open hearth furnaces by a Morgan continuous gas producer plant having one 10-ft. producer for each furnace. These are housed in a building 24 ft. wide, running the full length of the open hearth building on the side next to the storage lean-to.

The coal handling apparatus installed in connection with the producers, Fig. 9, is very complete. It consists of an electrically driven coal crusher into which coal is dumped through a chute from cars on a trestle track; a double skip elevator, and four scale hopper cranes used for distributing crushed coal from a 600-ton overhead bin, which charge the coal directly into the producers. The movement of the skips is automatically controlled. As the car nears the limit of its downward travel it opens the coal bin door, and, in stopping, rests on a counterweighted lever. When the counterweight is overbalanced by the filling of the skip, it settles down about 3 in., thus actuating a switch which starts the car on its upward course, closing the coal bin door as it goes. This operation is repeated by the second skip, and continues without interruption until the coal bin is empty.

THE RAIL MILL.

To the rail mill belongs the distinction of not only surpassing in size all others heretofore built, but of be-

ing the only motor driven mill in the world rolling rails direct from the ingot without reheating. The mill motors, of which there are six, designed to develop an aggregate of 24,000 hp., were described in detail in *The Iron Age* March 11. Practically all of the machinery in the mill is electrically driven, and its operation is as nearly automatic as the imperative requirements of simplicity in rolling mill machinery allow.

The mill buildings are located at the south side of the plant site just west of the line of open hearth furnaces. The main mill structure is 990 ft. long by 85 ft. wide. It contains the rail mill, the plan of which is shown in Fig. 10. At a right angle with this building is another building, 84 x 1350 ft., which contains the soaking pit furnaces for both the rail and billet mills, the latter not

ated ingot buggies, for which an ingenious system of control has been devised.

Each buggy is intended to deliver ingots from six pits located respectively north and south of the mill table. Owing to the length of travel along the line of pits, the ingot buggy passes out of the operator's sight so that from his position in the mill he cannot see when it is opposite a particular pit. For this reason, and because of the need of guarding against a mistaken movement on the part of the operator that would bring the buggies into collision at the mill, a special controlling system was designed by which the buggies are automatically stopped at any given pit.

There are two master levers for the control of the two buggies; each lever can be set in any one of the eight

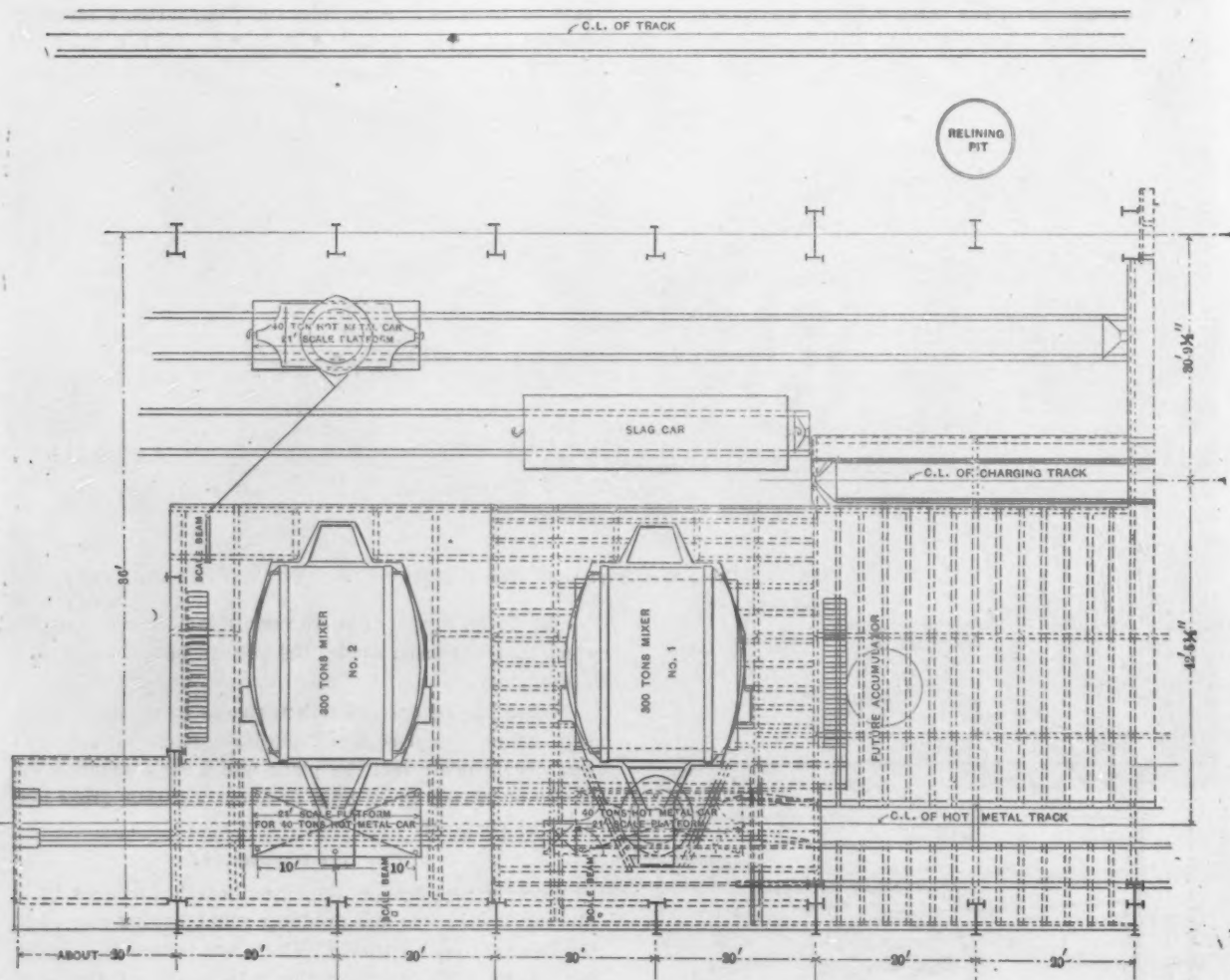


Fig. 6.—Plan of the General Arrangement of a Mixer Building.

yet being completed. An interior view of this building is shown in Fig. 11. Twelve of these pit furnaces serve the rail mill; each has four holes 6 x 6 ft., provided with the usual equipment of hydraulic cylinders for moving the covers. The reversing air and gas valves are of the Dybille type. Four 20 x 24 in., 8000-lb. ingots are accommodated in each hole. The soaking pits are served by three 7½-ton soaking or ingot cranes, each having a 5-ton auxiliary hoist on the trolley for repairing the pits which are fired with gas supplied from an independent Hughes mechanical gas producer for each pit.

The Soaking Pit Arrangement.

The ingots enter the building on the side next the open hearth furnaces, on two tracks running between the pits and gas producers the entire length of the building. On the mill side of the soaking pit building is another track for the transfer of heated ingots to the first stand of rolls. This line is traversed by two electrically oper-

positions, one corresponding to the mill table, six to the six soaking pits for each buggy and one to the "off" position. To send the buggy to any particular row of pits desired, the operator throws the controller to the point corresponding to this row, and when the buggy reaches the designated point it is automatically stopped. For the return trip the control is thrown to the mill table position; but, on account of the accuracy of stop required at this point, the buggy is not halted automatically, but being in plain view is stopped by the operator. By an interlocking arrangement between the two controlling levers, it is, however, impossible for them both to be thrown into the mill position at the same time, thus preventing the possibility of collision.

The Rail Mill Rolls.

There are in all 12 stands of rolls in the rail mill, all of which are driven at varying speeds by General Electric

alternating current motors. Eighteen passes are required for the conversion into finished rails of the ingot, which is introduced into the first stand without reheating. The first nine passes are employed in breaking down the ingot to a 8 in. x 8 in. bloom, while the last nine are devoted to the shaping and finishing of the rail. The initial group of rolls, Fig. 12, through which the first four passes are made, consists of four stands arranged in tandem, the first two being 42 in. and the second two 40 in. mills. No manipulation of the ingot between these stands is required, it being automatically given a quarter turn at each pass through them.

Passing onward from these mills, the ingot goes to a 40-in. three-high blooming mill which is equipped with a lifting table whose operation is controlled by a combined hydraulic and pneumatic device. Here it is given

The Manipulation in the Passes.

After each pass in the blooming mills the piece is edged. This movement for the first four edgings is effected by the use of collared rollers on the tables which turn the piece up as it passes over them and so avoids the necessity of stopping for manipulation. On the three-high blooming mill the turning and shifting of the piece after the fifth and seventh passes are accomplished in one movement by a vertical thrust of fingers with slanting tops, which rise automatically with the table. The bloom is handled in the same manner in the sixth and eighth passes, except that the fingers here, being stationary, come into play after the table drops over them.

The only manipulation necessary on the tilting tables of the three-high roughing mill is the shifting of the piece

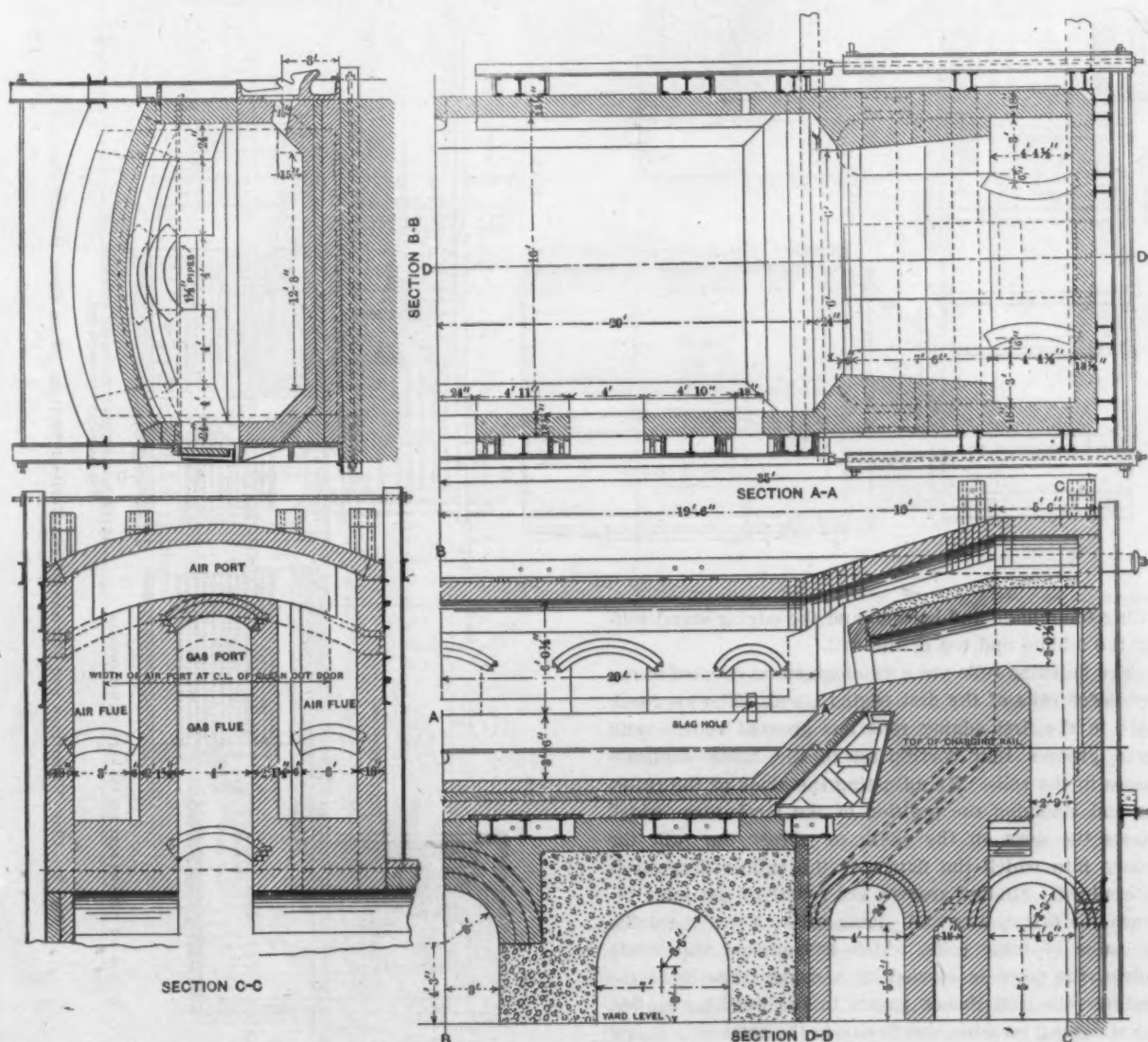


Fig. 7.—Sections Through the Hearth and Parts of an Open Hearth Furnace.

five passes, after which the bloom is run to a 10 x 10 in. horizontal bloom shear, where it is cut in two and cropped. The crop ends drop into a conveyor especially designed and built by the engineers of the Indiana Steel Company, by which they are conveyed outside of the mill, the arrangement permitting them to be deposited directly in cars.

From the shear the billet goes to the rail mill proper, where it receives three passes in a 28 x 60 in. three-high roughing mill served with tilting tables. From here on all subsequent passes are made in 28-in. two-high mills, each pass being made in a separate set of rolls. Leaving the first forming mill, the rail goes to the finishing mills, of which there are five stands.

for the different passes; on the delivery table this is done by arms which move over automatically after the table raises, while on the approach table it is accomplished by a simple "tumble bar" arrangement. Collared rollers are again used to turn the piece on edge as it passes from the roughing to the forming pass, and it is held in position to enter these rolls by a roller, next to the forming roll, fitted with two-high collars. The same method is used before the dummy rolls.

After the dummy pass the bloom is transferred by a chain transfer to the approach table at the first edging rolls. These rolls are driven by the same motor that drives the dummy rolls, and, since they must roll in reverse direction, the mills are made three-high, the dummy

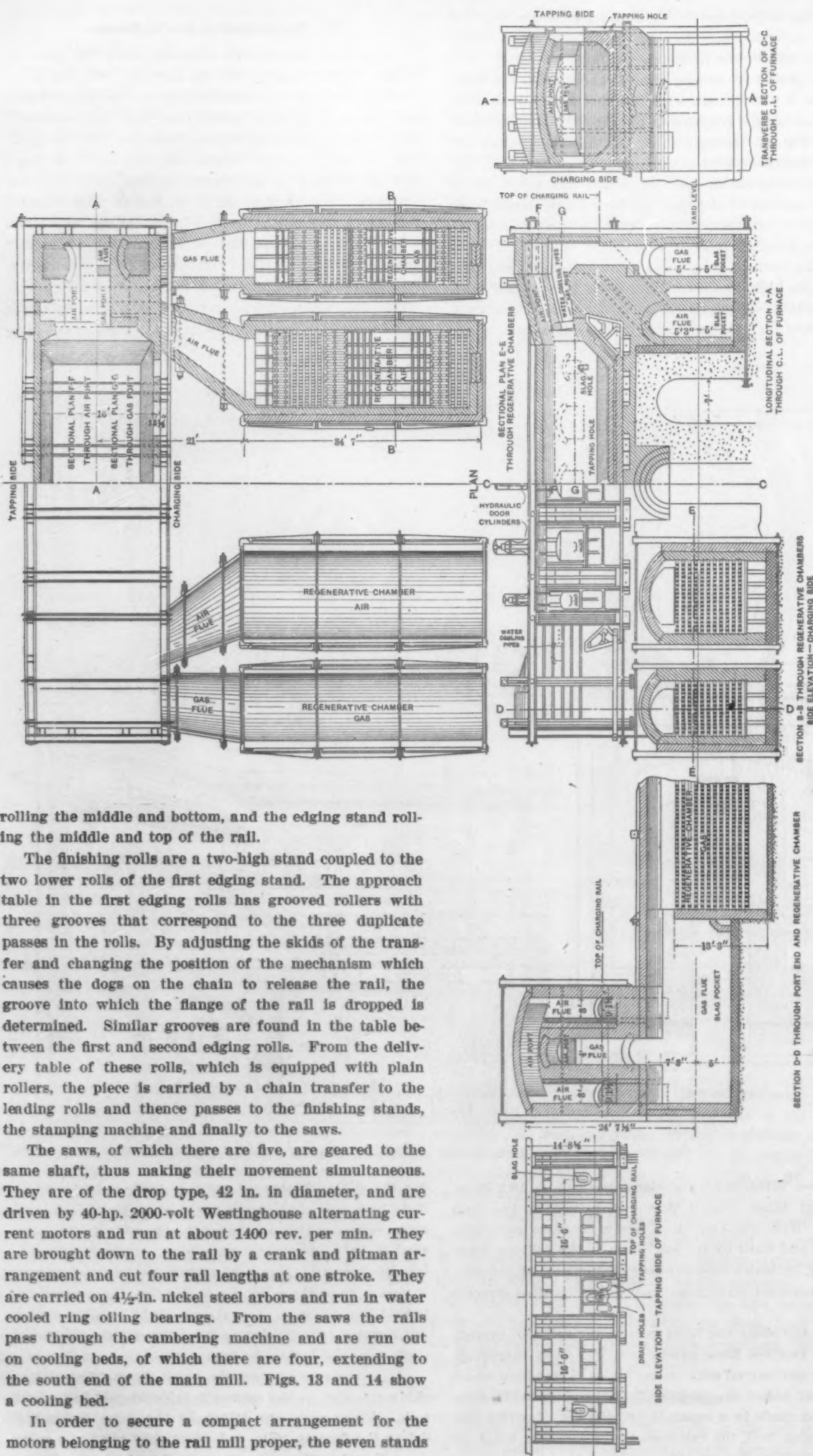


Fig. 8.—Plan, Elevations and Horizontal and Vertical Sections of an Open Hearth Furnace.

rolling the middle and bottom, and the edging stand rolling the middle and top of the rail.

The finishing rolls are a two-high stand coupled to the two lower rolls of the first edging stand. The approach table in the first edging rolls has grooved rollers with three grooves that correspond to the three duplicate passes in the rolls. By adjusting the skids of the transfer and changing the position of the mechanism which causes the dogs on the chain to release the rail, the groove into which the flange of the rail is dropped is determined. Similar grooves are found in the table between the first and second edging rolls. From the delivery table of these rolls, which is equipped with plain rollers, the piece is carried by a chain transfer to the leading rolls and thence passes to the finishing stands, the stamping machine and finally to the saws.

The saws, of which there are five, are geared to the same shaft, thus making their movement simultaneous. They are of the drop type, 42 in. in diameter, and are driven by 40-hp. 2000-volt Westinghouse alternating current motors and run at about 1400 rev. per min. They are brought down to the rail by a crank and pitman arrangement and cut four rail lengths at one stroke. They are carried on $4\frac{1}{2}$ -in. nickel steel arbors and run in water cooled ring oiling bearings. From the saws the rails pass through the cambering machine and are run out on cooling beds, of which there are four, extending to the south end of the main mill. Figs. 13 and 14 show a cooling bed.

In order to secure a compact arrangement for the motors belonging to the rail mill proper, the seven stands comprised in this department were divided into two

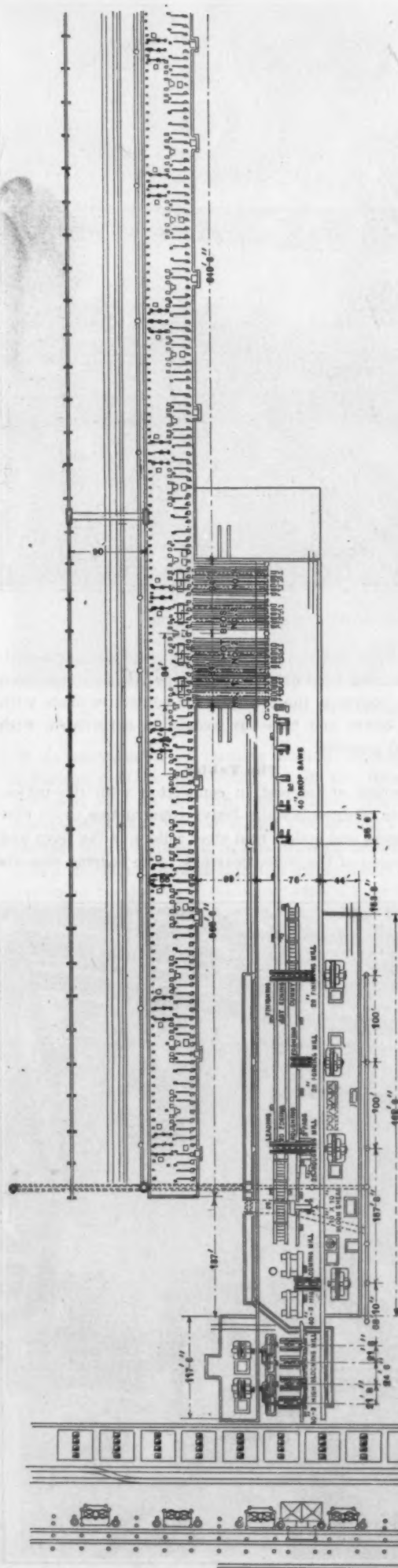


Fig. 10.—Plan of the Rail Mill.

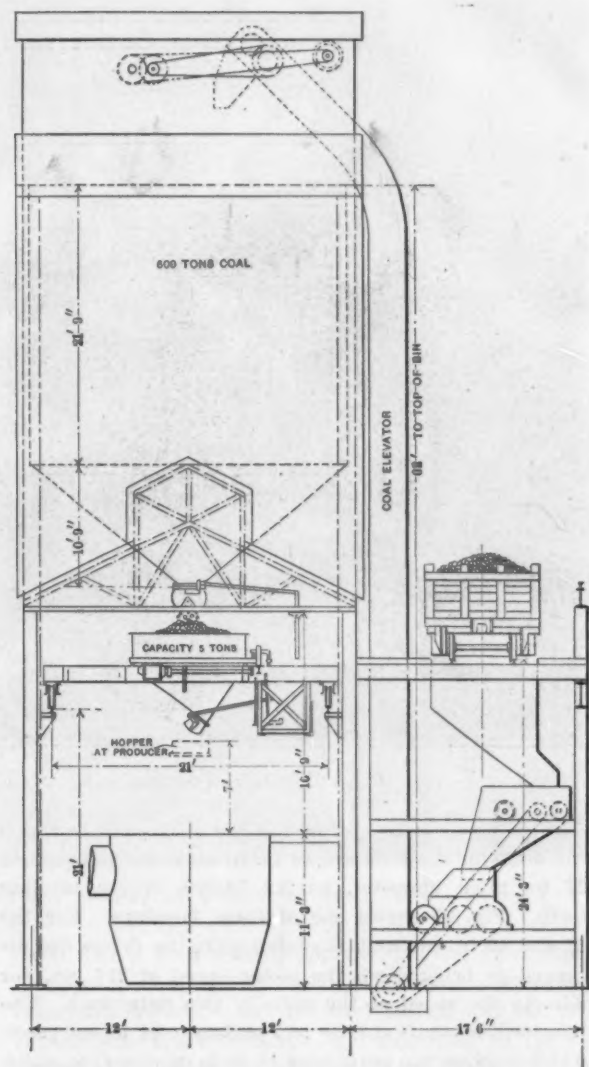


Fig. 9.—Sectional Elevation of the Coal Handling Equipment for the Gas Producers.

groups of three and one individual stand; each of the two groups being driven by a 6000-hp. motor, while the single stand is operated by a 2000-hp. motor. The first group consists of the three-high roughing mill and the second edging and leading rolls; the second group is composed of the dummy of the first edging and the first finishing rolls, while the forming stand comes between these two groups.

The speed of the rolls ranges from about 60 ft. per minute in the first passes to about 600 ft. per minute in the finishing rolls. The mills are all of very heavy design and have housings of the open top type to facilitate roll changing. Those on the two-high blooming mill weigh about 55,000 lb. each. The necks of the 40 in. and 42 in. blooming mill rolls are 22 in. in diameter, and the necks are 40 in. pitch diameter, machine molded, having 14 22½ degree staggered involute teeth, carried in bearings of the one-piece type. Fig. 15 shows the housings of the 40-in. three-high blooming mill. The pinion housings are of cast iron, so made that the two housings of a stand in conjunction with their single cap and bearings

form a closed case in which the pinions run. Protection from dirt and a means of thorough lubrication are afforded by this case, whose only openings are six small doors, two of which are located on each side and two in the cap; these covers are fastened to the housings by hinges. The spindles and wabblers are of the usual four-rod type.

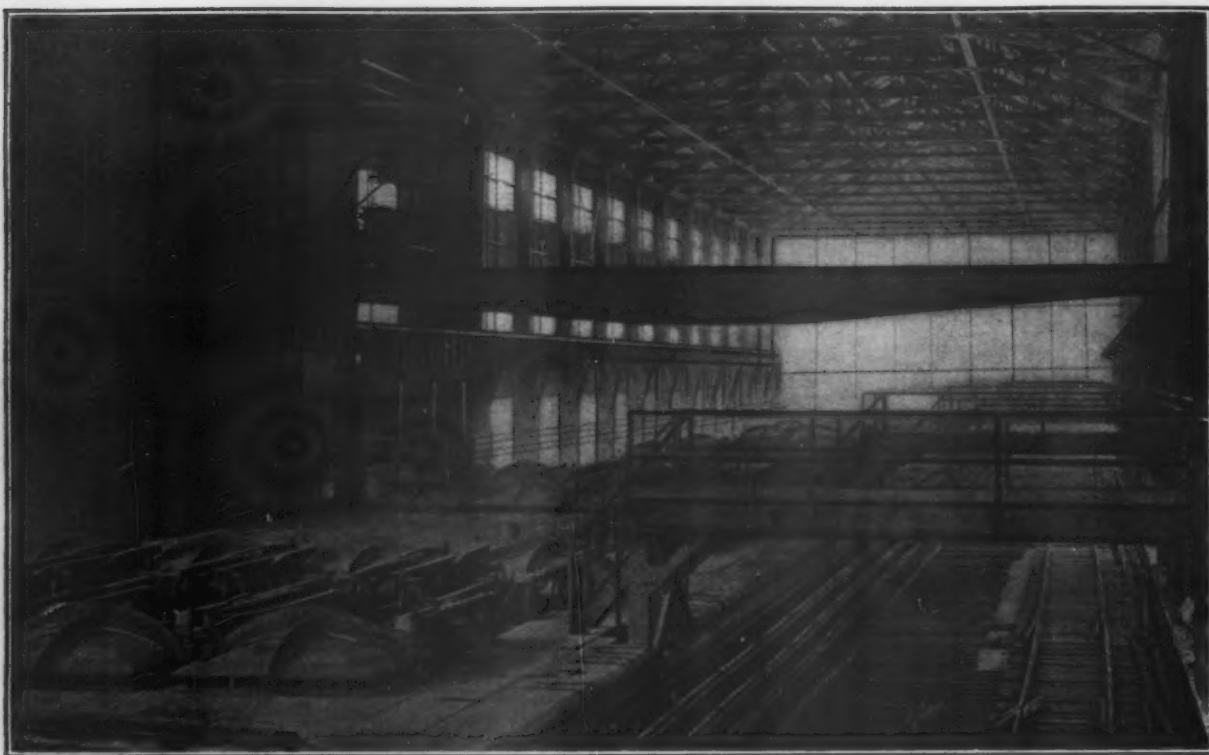


Fig. 11.—Soaking Pits, Connecting Through the Opening at the Left with the Rail Mill.

Similar housings are used in the 28-in. mill, in which the necks of the rolls are 16 in. in diameter and pinions 27 in. pitch diameter, having $14-22\frac{1}{2}$ degree involute teeth. Fig. 16 shows one of these housings. For the 42 and 40 in. two-high blooming mills the drives are arranged to bring down the motor speed of 214 rev. per min. to the speed of the mills in two reductions. The intermediate shaft carries two pinions, cast in one piece, which engages two gears over 18 ft. in diameter, to which the mills are coupled. Support for the drives is fur-

nished by girders bolted together, thus forming practically one bed for both drives. The large gears are mounted on 24-in. journals, the bearings for which are made with quarter boxes and take up wedges in accordance with approved practice.

The Tables.

A feature of interest in connection with the tables, which are of exceptionally heavy construction, with cast steel girders and hollow cast steel rollers, is the form and arrangement of the roller bearings. The bearing consists



Fig. 12.—Roughing Rolls of the Rail Mill.



Fig. 13.—View of Cooling Beds on the Finishing Side, Showing the Kick-off and Roller Table.

of a heavy cast iron bushing with a machine molded spherical disk on its center, which fits into a bored spherical seat in the cap and girders. The ball and socket joint thus formed allows the bearing a universal motion, which enables it to line up with the roller shaft, and a dowel pin driven into the girder holds the bushing from turning. On the miter side a split bearing is

used with a solid bearing opposite, but the arrangement permits the use of split bearings as spares throughout. The table driving motors are the Westinghouse mill type, which, wherever practicable, are supported on the side shafts and a spring suspension.

Because of their weight and unusual design, the lifting tables, Figs. 17 and 18, serving the three-high bloom-



Fig. 14.—View of Cooling Beds from the Opposite Side to Fig. 13.



Fig. 15.—The 40-In. Three-High Blooming Mill Housings.

ing mill, are of noteworthy interest. On account of the great weight of the tables, whose lifting parts weigh 145 tons, a special method of balancing was necessary. The inertia of an ordinary weight would have been so great as to interfere with the high speed required in the operation of the tables and a simple hydraulic balance was open to the same objection. An air hydraulic system

was therefore evolved, in which the balance cylinders are connected to a tank with no intermediate valves, except, of course, the ordinary gate type shut off valves.

Beyond the controlling devices used for raising and lowering the tables and operating the motor drives, no manipulation of the tables is necessary, since the tables are equipped with automatic manipulating apparatus,

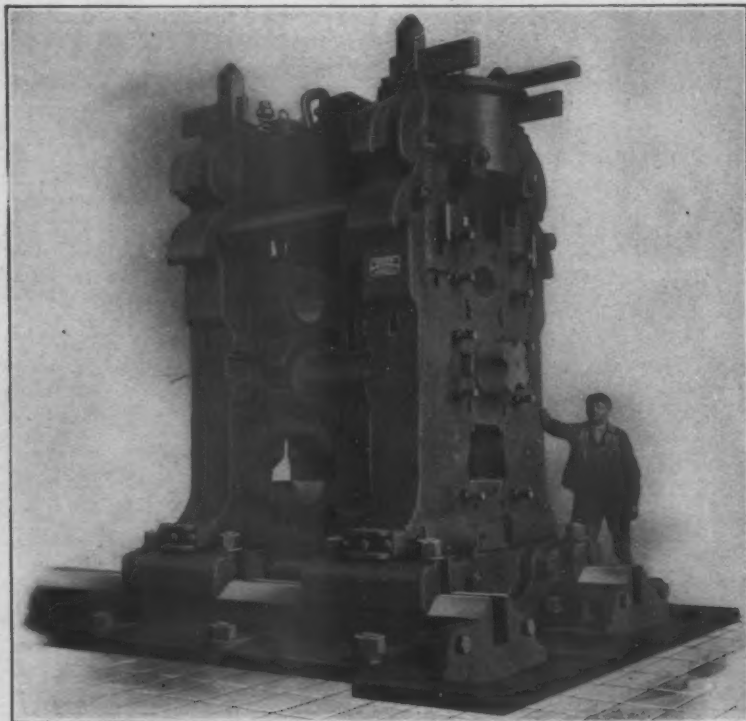


Fig. 16.—The 28-In. Three-High Rail Mill Housings.

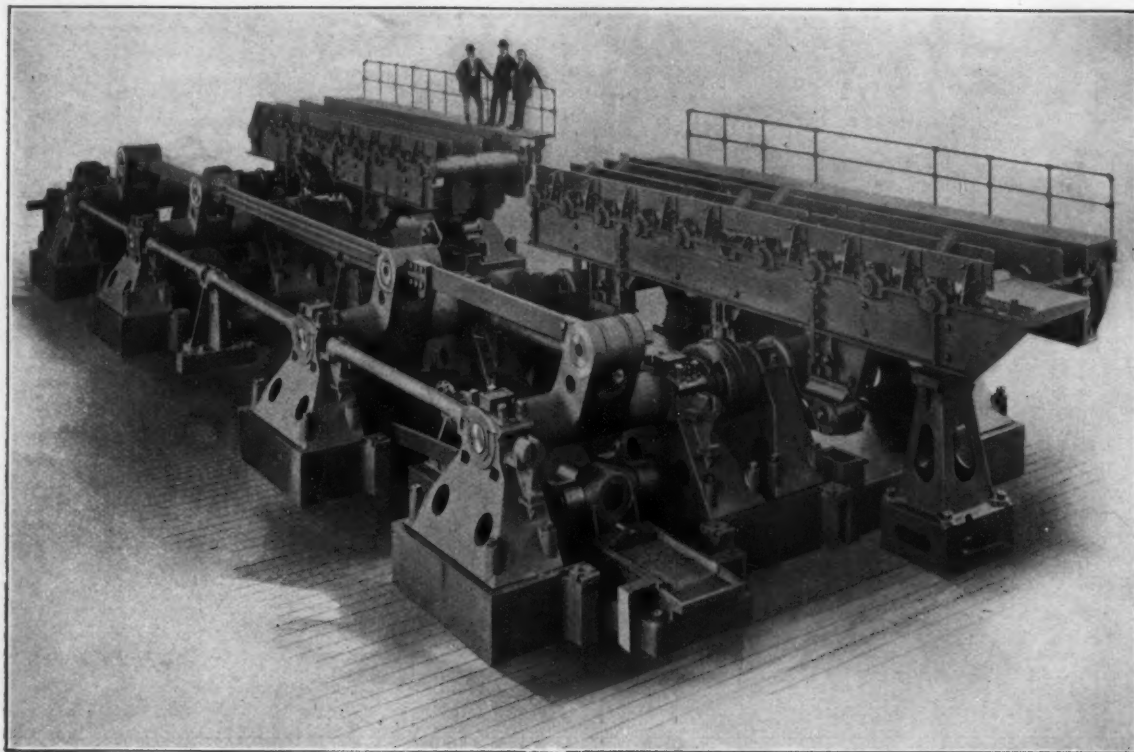


Fig. 17.—Lifting Tables for the 40-In. Blooming Mill—Table Side.

which is actuated by their own motion. Instead of being fastened to a rigid support, the link which operates the levers used in raising the fingers is fastened to a weight heavy enough to operate the manipulator, yet so proportioned as to rise with the table in case the mechanism should become caught, thus avoiding accidents which might otherwise damage the table or manipulator.

The design of the table includes the use of exceptionally large pins and bearings, the intention being to keep the bearing pressures below 300 lb., thus reducing the wear to a negligible quantity. Both to reduce weight and to allow thorough lubrication, the pins, which are cast steel, are made hollow, with cavities for oil. The table lifting mechanism consists of a crank and connecting rod arrangement which is driven by a 250-hp. Westinghouse motor. Their speed is about 3 sec. per stroke, which raises the tables through about 42 in. in that time.

Though very much lighter, the tilting tables, Figs. 19 and 20, are designed along similar lines. In both of them

the lifting mechanism is placed out from under the table in a separate pit to guard the machinery against damage from ground water and keep it away from scale dropping from the tables. In order to make this arrangement effective, long rock shafts were required, which in turn necessitated the use of four bearings, two of which support the weight under the table, the two outside taking the side pull of the mechanism. The difficulty of preserving absolute alignment between the four bearings was met by the introduction of sliding plate couplings between the two pairs. These couplings are of the Oldham type and consist of two grooved flanges keyed and shrunk onto the shaft, and a central disk with two tongues at right angles, one on each face, these tongues engaging the grooves in the flanges, giving it the effect of a universal joint.

The Finishing Department.

From the hot beds the rails are carried across to the finishing mill, Fig. 21, which occupies a building 1383 ft.

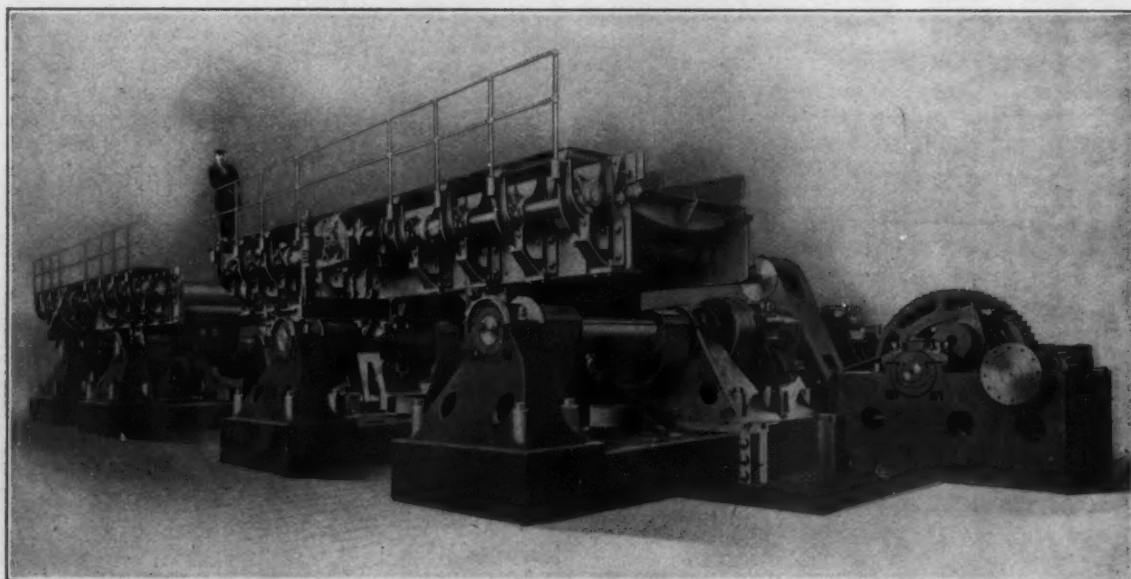


Fig. 18.—Lifting Tables for the 40-In. Blooming Mill—Operating Side.

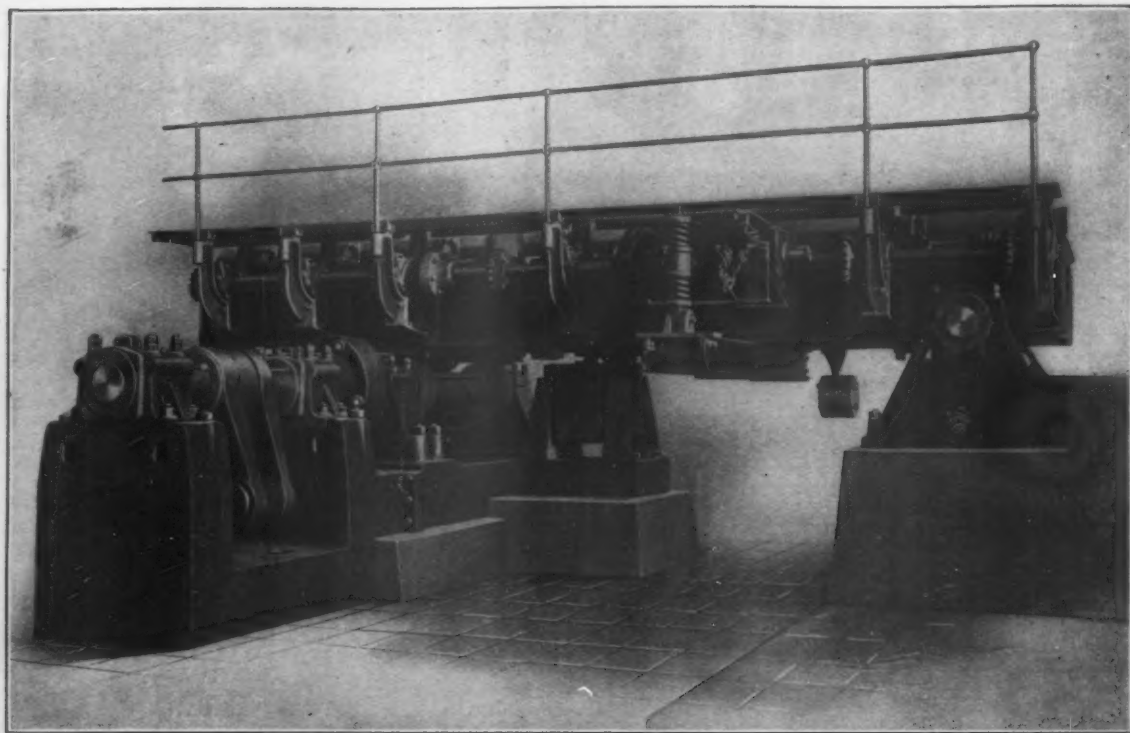


Fig. 19.—Tilting Tables for the 28-In. Rail Mill—Table Side.

long by 55 ft. wide, running parallel with the main mill on the south side. The hot beds open into it midway of its length. Live rolls extend from one end to the other. The roller tables, which are equipped with stops and kick-offs, transfer the rails to the straightening presses, Fig. 22, of which there are 16, of the usual type, motor driven. From the straighteners the rails are skidded to three spindle vertical drill presses after which they are transferred to a lower table, whence they are skidded to the loading beds outside of the building.

The loading yard is co-extensive in its length with the finishing department, and is provided with the usual inspection beds. It is served by two car tracks, connected with the track system of the plant at both ends. Two traveling cranes of 90 ft. span cover the full length of the yard, furnishing means for handling the finished rails and loading them directly on flat cars.

The principal part of the mill equipment in the rail mill proper was designed and built by the United Engineering & Foundry Company, Pittsburgh, Pa., with the exception of the machinery in the finishing department which was furnished by the Morgan Engineering Company, Alliance, Ohio.

The Dodge Idea and Power and Transmission.

Under the above title the monthly magazine, *Power and Transmission*, published for many years by the Dodge Mfg. Company, Mishawaka, Ind., appears in the March issue in a new dress, having been changed from a 6 x 9 in. magazine form to 11 x 14 in., 20 pages. The initial issue bears a handsomely illuminated cover, symbolic of the industry to which the journal is devoted and the leading article describes a 1000-hp. rope drive installed in the works of the North & Judd Mfg. Company,

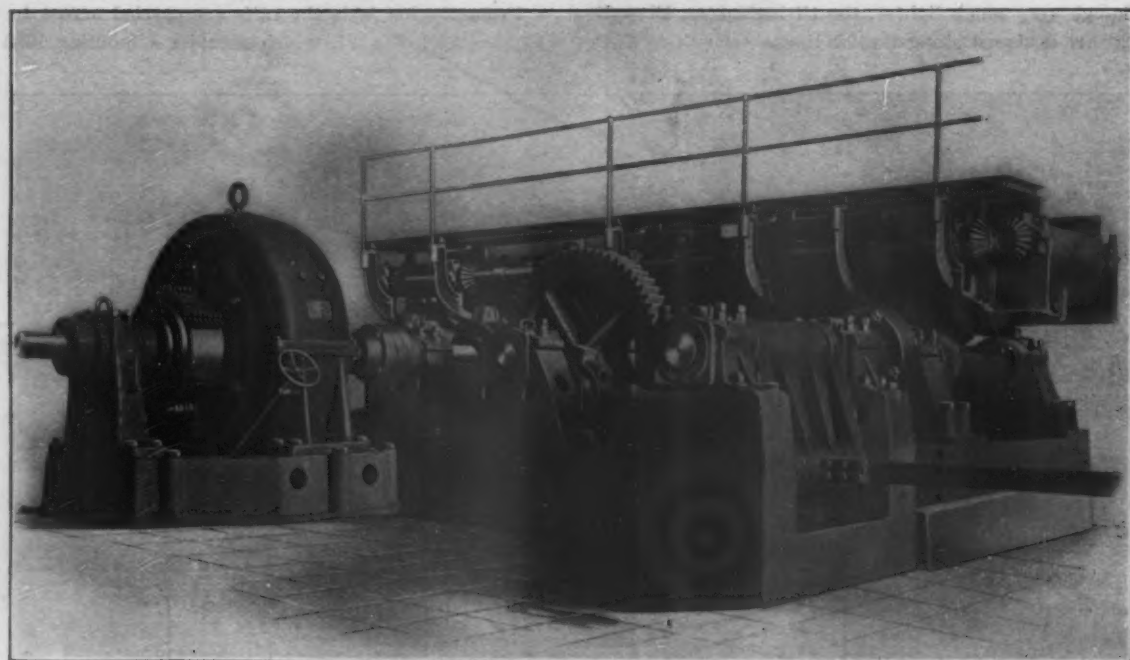


Fig. 20.—Tilting Tables for the 28-In. Rail Mill—Operating Side.

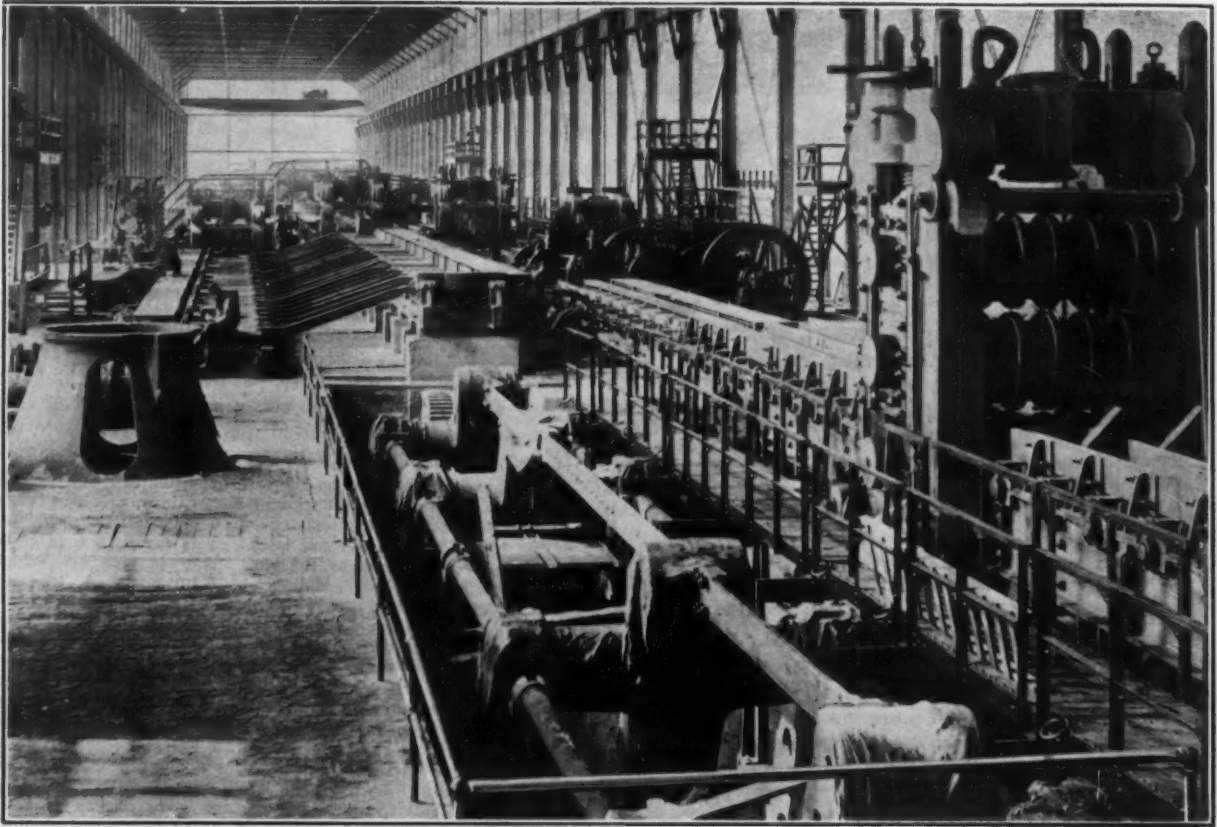


Fig. 21.—Finishing End of the Rail Mill.

North Brighton, Conn. In connection with an article on the growth of the Portland cement industry in America is shown an interesting diagrammatic chart illustrating the wonderful development of cement products in the past 10 years.

The method of transforming large belt wheels into rope drives is illustrated by views of an installation of this character in which hardwood lagging is fitted to an iron engine flywheel 22½ ft. in diameter by about 62 in. in face width, which, by lagging, was changed to a rope

sheave 23 ft. 8 in. in pitch diameter with 27 grooves for a 1½-in. rope. The lagging is 7 in. thick from the inside to the pitch line of the ropes and has a finished width of 65¾ in. across the face. It is said to be the largest flywheel ever made equipped with hardwood lagging in this manner. The work is done on a special machine at the Dodge factory, which prepared the first of the lagging to fit the iron wheel to which it is to be fastened. Another feature of the paper is the question and answer department, in which power plant topics are discussed.

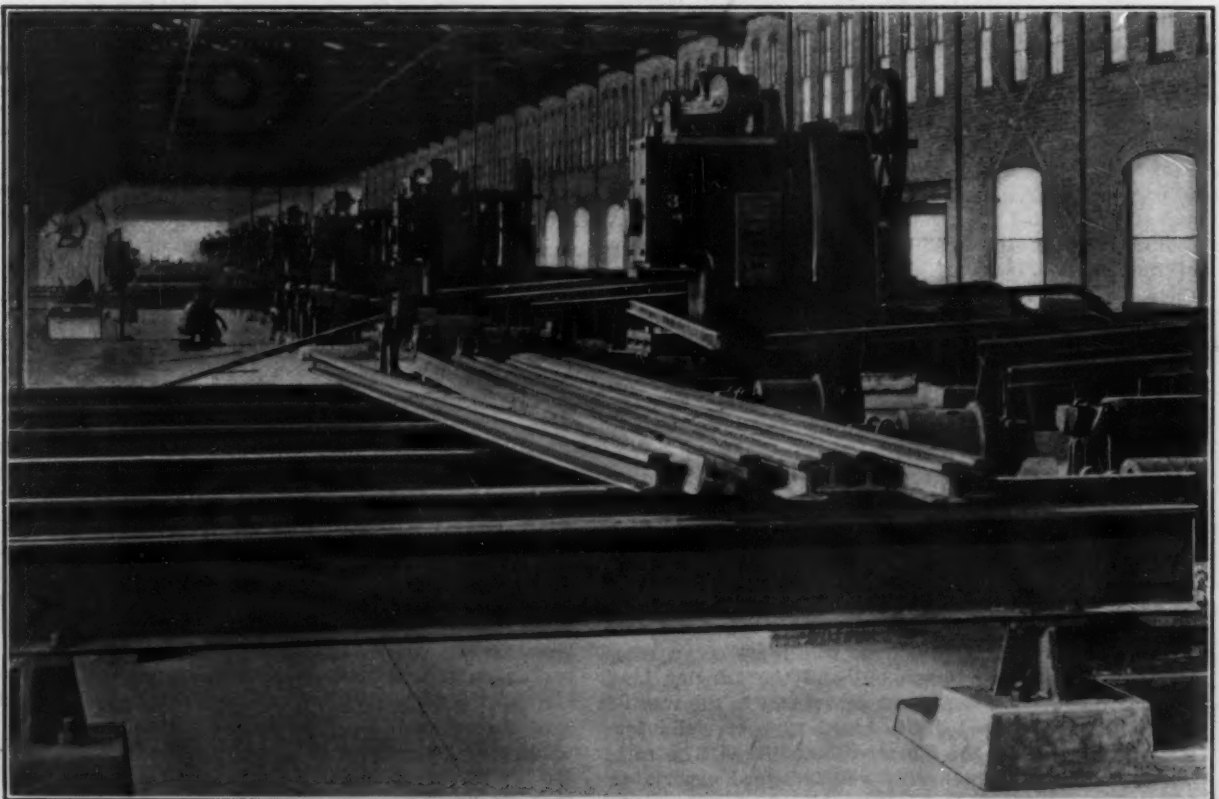


Fig. 22.—Coping and Punching Department of the Rail Mill, Containing 16 Straightening Presses.

A COMPROMISE TARIFF ACT.

The Proposal to Force a Vote by April 10 in the House—The Senate Committee Raising Some of the Payne Bill Duties.

WASHINGTON, D. C., March 30, 1909.—So many members on both sides of the House desire to be heard in the general debate on the tariff bill that it has been decided by the majority to attempt this week, by a special rule if necessary, to bring the bill forward by sections, with the understanding that not to exceed six days shall be consumed under the five-minute rule, thus forcing a vote not later than April 9 or 10. The necessity of amending the bill in numerous particulars without laying it open to modifications devised by Democrats and insurgent Republicans in combination is causing the majority leaders much anxiety. It seems inevitable, therefore, that the special order for the discussion of the bill by items will specify the schedules to which amendments may be offered, and will even particularize the items subject to modification.

Committee Amendments to Be Offered.

Many clerical errors and manifest inconsistencies have been discovered, and these the committee intends to correct by amendments to the various paragraphs as they are reached. As to the scope of these amendments, the following statement was made to the correspondent of *The Iron Age* by a member of the committee:

"The committee is preparing a considerable number of amendments, but we endeavor to limit them to corrections in the text and in the meaning of the language employed. We are in receipt of hundreds of requests to make fundamental changes in rates and in classification, but if we should accede to any of these we would be obliged to reopen the whole bill and practically to make it over again. Our attention has been called to a good many errors in the measure, and to some discrepancies between the rates on raw materials and finished products. Manifest errors will be corrected, but I doubt if the committee will act upon every suggestion looking to the readjustment of rates on materials and products. I assume that those who desire changes in the bill which the House committee does not feel justified in making will apply to the Senate, but if they are made by the Senate Finance Committee I cannot say what position the House will take when the bill goes to conference."

While the majority leaders confidently count on the Democratic minority to help defeat all amendments by Republicans for the restoration of such Dingley rates as have been reduced, they realize that upon the proposition to prevent the free amendment of the bill the Democrats and the so-called insurgent Republicans will form a coalition and in all probability will command a majority of the House. They are therefore doing everything in their power to bring the insurgents into camp through the binding influence of a party caucus, which will probably precede the framing of the special order referred to.

The Senate Committee at Work.

The Senate Finance Committee has already made great progress in the consideration of the House bill. It will follow the example of the House committee in endeavoring to keep secret the changes made in executive sessions. The general tendency of the amendments to the Payne bill is to restore the Dingley rates, and in a few cases to raise them, and Senator Aldrich and his colleagues are planning to send to conference a measure in which there will be plenty of material for trading purposes. In other words, the present outlook is for a new tariff law that, broadly viewed, will represent a compromise between the Payne bill and the Dingley law, with here and there important departures in the way of increased or decreased duties based upon special information gathered by the Finance Committee. The committee is taking counsel with well informed experts on the various schedules and is preparing to correct many of the errors of the Payne bill.

Chairman Payne on Iron Ore.

Readers of *The Iron Age* will be interested in a few extracts from a carefully revised draft of the speech made by Chairman Payne in explanation of the provisions of the pending bill. Special attention is paid in this statement to iron ore, pig iron, tin plate and files, items which were the subject of much interesting testimony before the Ways and Means Committee. Referring to iron ore, Mr. Payne says:

We have put iron ore on the free list after full consideration by the committee. The evidence of Judge Gary, president of the United States Steel Corporation, was that in the production of pig iron 2 tons of our ore would go as far as 3 tons of the ore imported from across the sea. That is true also of the Nova Scotia ores, they yielding about 40 per cent. iron and ours about 60 per cent. It follows that there would be no occasion or necessity of a duty of 40 cents a ton on iron ore.

They have discovered some mines in northern Cuba, not largely developed, whose ores carry a larger per cent. of iron, amounting to about 50 per cent., as against 60 per cent. for our ores in the State of New York in the Champlain District. That presents a clear question of competition, because 5 tons of our ore will go as far as 6 tons of theirs, so that there is not so great a difference, because of the difference in the richness of the ore.

Our New York State ores are largely hard ores that are necessary in mixing with softer ores in the making of pig iron. If anybody in the United States has a right to complain over the ore duty it is the owners of the mines in my own State, and I think they have no right to complain. I satisfied myself of that before I agreed to this provision of free ore. Mr. Witherbee, a most intelligent and worthy gentleman, one of the citizens of the highest character of our State, came before the committee and stated that they could stand a reduction of the duty on iron ore, but he did not think they could stand a reduction to a free ore basis. After we had had these statements in the committee, I wrote a letter to George Otis Smith of the Geological Survey and got the records of that survey as to the richness of ores, both foreign and domestic, and made a careful comparison of his statement and of the statement presented by this gentleman, and I found that they agreed as to the richness of the ores.

Now, the importation of iron ore has been, on an average, about 1,000,000 tons a year for a good many years, with a tariff of 40 cents a ton. After the Cuban treaty, reducing the duty on ores from Cuba to 32 cents, the importations from Cuba increased to about 500,000 tons a year, while those from foreign countries decreased about 500,000 tons a year, showing as was stated by some gentleman acquainted with this business, that when Cuban ores came in at a lower rate of duty they were enabled to drive out a half million tons of foreign ores and take their place in the market of the United States.

Ownership of Cuban Ores.

Replying to questions by members of the minority, Mr. Payne denied that the United States Steel Corporation was interested in Cuban ores, and added:

Some of the smaller concerns are located near the Atlantic seacoast—the Pennsylvania Steel Company at Sparrows Point, and perhaps this company is at more disadvantage than some of the others who are manufacturing iron and steel. If it can get its iron ore a little cheaper on account of the taking off of this duty, it would help it to keep on in the uneven race it has with the great concern, the United States Steel Corporation.

A lively colloquy took place between Chairman Payne and Representative Young of Michigan concerning the subject of royalties on iron ore. Mr. Payne said that Judge Gary testified that 12 years ago the royalty per ton was 10 cents; that he figured the royalty now at 40 cents a ton, and that went on into all computations of profits on various articles manufactured by the Steel Corporation. Referring to the Great Northern ore deal, based on 85 cents royalty, Mr. Payne said: "There is a feeling on the part of people who control ore beds to keep up the royalty. They are fearful they may have to give up part of it if we take off the duty of 40 cents a ton, and yet the question comes whether it is not right for the American people to have some consideration in that regard."

Mr. Young of Michigan interrupted to say: "If Judge

Gary's statement will bear the construction the gentleman puts upon it, it is absolutely misleading. I have lived in the iron district for 36 years. I have drawn probably more leases for ore than any man living in that district. Long before 12 years ago those leases were frequently drawn at 75 cents a ton royalty. I only know of one instance where as low as 10 cents was given, and that was on a low grade ore, very difficult to reach. The average royalty, aside from this astounding contract for the Hill land, is not higher clear through the entire iron region than it was 12 or 14 years ago, and averages about 30 cents. I myself, before the organization of the Steel Corporation, paid as high as 75 cents royalty; and if the gentleman is drawing any conclusions from that statement they must be wrong, and I wish to say right here that I think that Judge Gary's statement was based upon the fact that during the panic years following 1893 the old Carnegie Company did buy—not lease—some ore lands which turned out to be about on a basis of 10 cents per ton, there being much more ore than the parties who sold them supposed there was, they being at that time in financial stress."

The Reduction in Pig Iron.

Taking up the subject of pig iron, Mr. Payne explained the cut made by the committee as follows:

From 1902 to 1906, both inclusive, the Bureau of Corporations in the Department of Commerce and Labor received reports from seven iron and steel companies in the United States which produced 93 per cent. of the entire output. They were allowed to examine the books as well as the reports of these steel corporations, and to employ experts. They made a thorough examination. Judge Gary said that his company was first to yield to this examination and that the examiners had every facility. The result was that the average cost of pig iron in furnaces producing 93 per cent. of it in the United States was \$14.01 a ton. This was during five of our prosperous years under the Dingley tariff, not boom years like 1907, but five prosperous years. Judge Gary figured that from 1906 down to the present time the cost was a little more than that—\$14.75 to \$15 a ton. In that he put 40 per cent. depreciation for ore property, put in profits on hauling, profits on manufacturing coke and, of course, profits all along the line, until he got down to the final cost of his pig iron.

Mr. Schwab of the Bethlehem Steel Company, who appeared to be a very frank and fair witness before the committee, made his cost of pig iron \$14.19 a ton, or less than Judge Gary made it. We had some estimates from these gentlemen about the cost of pig iron abroad, mentioning one or two districts where pig iron had been produced as low as \$9—perhaps \$9.75—a ton. And I think Judge Gary is, perhaps, the only witness that mentioned this. But fortunately, through the efforts of this committee and the efforts of the Department of Commerce and Labor, Charles M. Pepper, well known to many of the older members of the House, formerly a newspaper correspondent and a bright, well informed man, was sent to Germany to study the iron and steel industry.

He went to the two best districts in Germany, the Dortmund District and the Luxemburg District, and in a report which I have here, which is available to the members of the House, he made up the cost of pig iron. In the Dortmund District it was from \$13.57 a ton to \$14.28 per ton; in the Luxemburg District, from \$12.88 to \$13.61 per ton. An average of this would be about \$14.01 per ton, with the seven companies, for the period of five years. It would be only slightly less than the amount given by Mr. Schwab as the cost of his pig iron. Judge Gary says that the freight to New York from these districts was \$2.85 per ton, which would seem to give our people a mighty good show for competition with a reduction of duty from \$4 to \$2.50 per ton. So we cut the duty from \$4 to \$2.50 per ton. Judge Gary was asked the question whether, if the duty was taken off of pig iron, it would bring any more foreign pig iron into the United States. He said that while that entered somewhat the realm of prophecy, he thought it would be much more profitable for the foreign countries to manufacture pig iron into steel and iron products than it would to sell it even at an advance to the United States.

Alabama Pig Iron.

Representative Hobson of Alabama, a retired naval constructor, questioned Mr. Payne regarding the details of the statement submitted by the United States Steel Corporation as to the cost of producing pig iron, whereupon Mr. Payne demanded to know whether the Alabama member was for or against the reduction in the duty on pig iron. Mr. Hobson replied that he favored a greater reduction, adding:

I believe it should have been put down as much as a third more. This could work no injury to the pig iron industry of this country and would at the same time cause some importations, which were only 200,000 tons last year, though our consumption is about 25,000,000 tons. If the duty were put down somewhat lower than is proposed it would enable the people in

the coast States to get the benefit of it, and it would also yield us revenue.

The Duty on Scrap.

Concerning the duty on scrap as provided in the bill, Mr. Payne said:

Gentlemen appeared before the committee and stated that in the new process of making steel, the open hearth process, it was absolutely essential that they have wrought iron and wrought steel scrap, and that there was not produced in the furnace, from that clipped from the rails and all that sort of thing, enough to furnish the open hearths with a sufficient quantity of this wrought iron and steel scrap. The reason it is necessary to have it is that the pig contains so great a quantity of carbon that when it is superheated the carbon makes it boil over, the carbon is not consumed rapidly enough and the scrap helps to steady it. There is not so much carbon in that, and they are able in that way to make the open hearth steel with greater facility and greater ease. In fact, one man told me that they could not make this steel unless they had scrap to put with the pig iron. An appeal was made to the committee to put scrap steel and scrap iron on the free list. They said it was already scarce in this country, that there was not sufficient to supply the demand, and with the universal revolution in steel manufacture, going from the old Bessemer furnaces to the open hearth process, there was a famine in scrap, and that there would be a greater famine when the furnaces had all started up. He thought it was essential for the prosperity of the business to put this scrap on the free list.

Representative Kennedy of Ohio suggested that foreign furnaces would break their pig into scrap cast iron and send it in at 50 cents a ton. Replying to this suggestion, Mr. Payne said he had no objection to an amendment that confines the term scrap to wrought iron and wrought steel, so that there will be no ground for the apprehension that pig iron broken in two would be scrap iron.

The Rate on Tin Plate.

Taking up the subject of tin plate, Mr. Payne said:

There was a large cut in the tin plate duty in the Dingley bill and we have cut it again 20 per cent., reducing it from 1.5 to 1.2 cents per pound. This cut will not take away the tin plate industry from the United States. And yet if we did take away the industry, by lowering the duty still further, these gentlemen on the other side would be satisfied, because it would increase the revenue because of the large importation of tin plate that would follow. But the people of this country condemn any such idea as that; they are in favor of still continuing the manufacture for our people of the tin plate now used in the United States.

Manufacturers on the Steel Schedule.

In concluding his remarks on the metal schedule, Mr. Payne said:

The committee are receiving letters from the manufacturers of iron and steel, commending the steel schedule as a fair one. Once in a while a man objects in a single instance and tries to show the reason why we have cut it a little too low, but in the main the bill is receiving the commendation of manufacturers of iron and steel. It may be that some of these gentlemen will get up a back fire. It may be that they will frighten their workmen to remonstrance and all that sort of thing, but pass this bill with the metal schedule as it is now and you will find that the wheels of industry will start, not only as they were reported from Pittsburgh yesterday, but throughout the whole iron and steel districts of the United States, because the rates of duty are fair—fair to the consumer, fair to the manufacturers and fair to the laboring men.

Average Ad Valorem Duty of Payne Bill.

The charge made on the floor of the House by Representative Clark of Missouri, the minority leader, to the effect that the average rate of duty under the Payne bill is higher than that under the Dingley bill, the truth of which has been somewhat reluctantly admitted by Chairman Payne, has caused surprise in many quarters. The truth of the statement is attested by official figures compiled by the clerks of the Ways and Means Committee designed to show the revenue to be derived under the Payne bill as compared with that produced by the Dingley law. As a basis of this compilation, the experts have selected the importations of the year 1906, which were valued at \$702,597,946 and which produced a revenue of \$293,557,984, or 44.16 per cent. ad valorem. These figures include all merchandise imported, whether free or dutiable and whether paying specific or ad valorem duties. In calculating the revenue under the Payne bill the experts were obliged, of course, to select an arbitrary basis, as no one can predict the extent to which importations will be affected by increased or reduced duties, trade conditions, &c., and it was therefore decided to adopt the importations of 1906 as a starting point. Figured on this

basis, the prospective revenue is \$305,224,732, or 45.72 per cent. ad valorem and a net increase over the collections under the Dingley act in 1906 of \$11,666,748. It will thus be seen that the ad valorem under the Payne bill is estimated at 1.56 per cent. higher than that of the Dingley act. It should be understood, however, that this apparent increase in the rate of duty is due almost wholly to the transfer from the free to the dutiable list of a number of items from which it is desired to derive revenue. Excluding these transfers, the average ad valorem under the Payne bill would be considerably less than that under the Dingley act in 1906. It should be further understood that the average ad valorem of a tariff law changes from year to year according to the ratio between free and dutiable goods in the importations and between the various classes of dutiable goods. The average ad valorem under the Dingley act during the first year it was in force, for example, was above 47 per cent. and, while it fluctuated in subsequent years, the general tendency was downward, owing to relative increases in the imports of raw materials, either free of duty or paying low rates, which were consumed in our manufacturing industries.

Ad Valorems of the Metal Schedule.

Some interesting figures relating to the relative ad valorems of the Dingley act and the Payne bill, taken from the official figures of the Ways and Means Committee, may be here presented. Iron ore is reduced from 19.30 per cent. to the free list, and pig iron from 26.31 per cent. to 16.44 per cent. Scrap iron and steel are reduced from 35.38 per cent. to 4.42 per cent. Bar iron is cut from 28.42 per cent. to 14.65 per cent.; structural iron and steel, from 45.22 per cent. to 27.25 per cent.; iron and steel forgings, from 35 per cent. to 30 per cent.; rails, from 33.32 per cent. to 16.06 per cent.; tin plate, from 53.03 per cent. to 42.43 per cent.; ingots, from 20.14 per cent. to 19.55 per cent.; wire rods, unchanged; iron and steel wire, from 41.48 per cent. to 39.31 per cent.; wire rope, from 56.22 per cent. to 53.84 per cent.; iron castings, from 15.07 per cent. to 14.94 per cent., and pocket knives, from 77.71 per cent. to 71.70 per cent. Razors have been increased from 55.10 per cent. to 69.10 per cent. Table cutlery is reduced from 49.94 per cent. to 43.16 per cent.; saws, from 29.50 per cent. to 24.40 per cent., and machinery, from 45 per cent. to 30 per cent.

W. L. C.

The Pressed Radiator Company's Growth.

The Pressed Radiator Company of America, manufacturer of Kinnear radiators, has been incorporated under the laws of Pennsylvania, with an authorized capital of \$1,250,000. This new corporation will absorb the Pressed Radiator Company, a New Jersey corporation, providing at the same time \$500,000 additional capital. The new capital is to provide the increased manufacturing facilities required by the rapidly expanding business in pressed radiators, and also to provide for the company's engaging in the manufacture of boilers and heating specialties.

It has been deemed expedient to change the corporate title, adding the words "of America," because of the extensive foreign business in pressed radiators which has developed in the last three years. Besides its own offices in Pittsburgh, New York and Chicago and 25 agencies in the principal cities of the United States, the Pressed Radiator Company has its own offices in London and Paris and agencies in Hamburg, Brussels, St. Petersburg and Yokohama. As is well known, pressed radiators possess advantages in the way of reduced weight, reduced space occupied, facility of handling, &c., over previous forms of radiation. The works and principal offices of the company are in Pittsburgh.

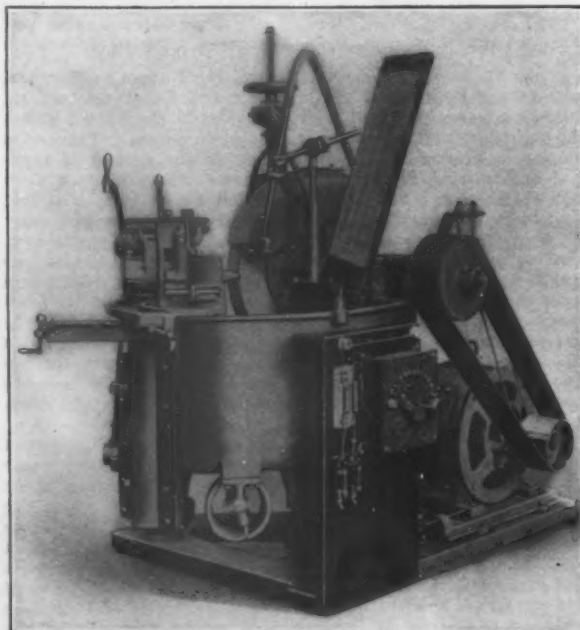
The Dixon Steam System Company, Chicago, heating contractor, has the contract for installing Kinnear pressed radiators, approximating 6000 ft., in the First National Bank Building, Pittsburgh, which is now being erected.

The Great Lakes Dredge & Dock Company, East Chicago, Ind., has floated a large dredge that has been at

anchor in the canal at Indiana Harbor, Ind., since 1907, and has begun the completion of the canal to the Calumet River, a distance of two miles. The work, it is estimated, will cost \$750,000. The canal will be three miles long. It is to be 100 ft. wide and 15 ft. deep, but eventually this will be increased to 200 ft. wide and 20 ft. deep. The purpose of the canal is to give lake vessels access to the important manufacturing towns in the Calumet region by way of South Chicago harbor, via the Calumet River, or by way of the port of Indiana Harbor.

The Sellers Automatic Tool Grinder.

A machine to grind the various tools that are used on planers, lathes, boring mills, shapers, slotters, &c., and which will do it automatically and accurately, has been designed and placed on the market by Wm. Sellers & Co., Inc., Philadelphia, Pa. It has proved by actual work in machine shops that it will do the work better than it can be done by any other method. It is first necessary to adopt standard forms and cutting angles for the various tools and then every tool ground thereafter will



An Automatic Machine for Grinding All Kinds of Tools, Built by Wm. Sellers & Co., Philadelphia, Pa., and Equipped with Motor Drive.

conform to the standard which has been found to be the best suited to that work.

Illustrated herewith is an electrically driven universal tool grinder, which will grind all manner of cutting tools except those with concave curves and re-entrant angles less than a right angle. It is shown driven by a 7½-hp. direct current constant speed type S Westinghouse motor running at 975 rev. per min. The motor is mounted on the subbase of the grinder, and a starting rheostat with fuses and switch is also mounted by the side of the grinder, resulting in a most compact and convenient equipment.

A rotary pump forces water to the tool being ground through a system of jointed pipes ending in an adjustable nozzle, furnishing a large volume of water at a low velocity. This is so arranged as to prevent the water from splashing and keeps it away from the working parts.

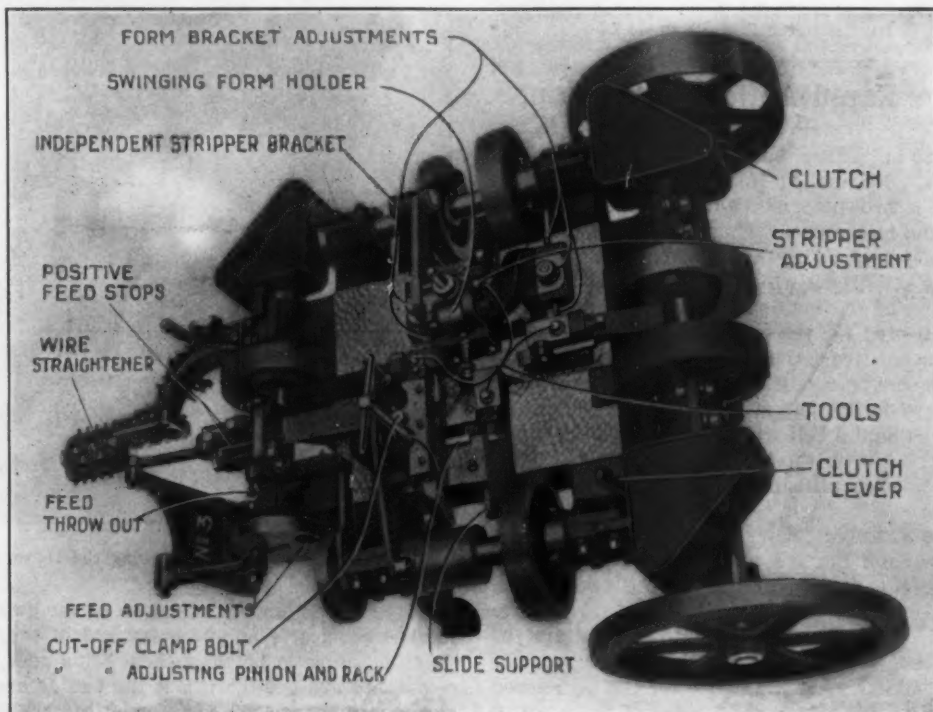
With the grinder the company supplies a set of tools which it has found from experiment to be best designed for various classes of work, but provision is also made so that any form of tool, within the limitations of the machine previously mentioned, can be ground correctly to the standard adopted. It is to be remarked that this machine is operated successfully by unskilled labor because of the automatic feature by which shapes are accurately duplicated rapidly and reliably. With the machine is supplied a table which shows the adjustments for various tools, &c., so that it is very simple for any operator to learn to do the grinding.

The New Baird Wire Forming Machine.

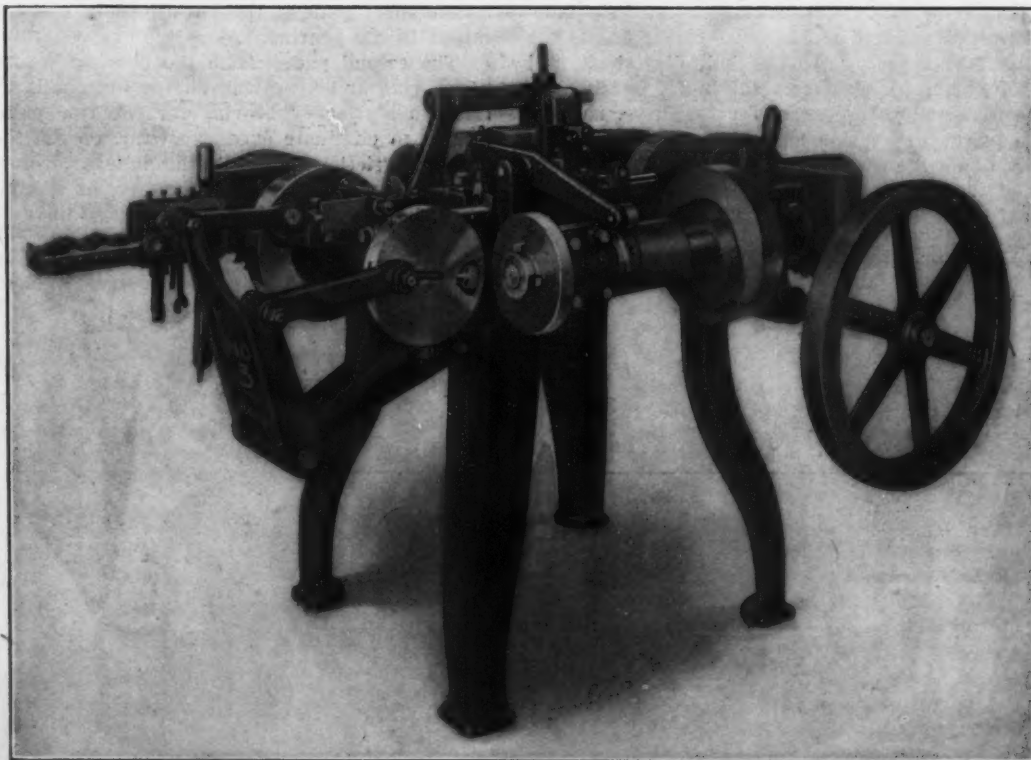
Several new features, all tending to increased efficiency and greater simplicity and ease of adjustment, have been introduced in the redesigned automatic four-slide wire forming machine of the Baird Machine Company, Oakville, Conn. The feed is very much simplified. An improved crank mechanism is used, doing away with

binder cam requires any adjustment, the time of gripping and releasing the wire being practically the same for any length.

The new cut-off marks a decided advance in practice, in the ease and quickness with which it is adjusted, the method being to loosen one clamp bolt and with the same wrench operate a stud pinion engaging with a rack, the heads being close together on top. Another



A View from Above, Showing the Working Parts of the New Baird Wire Forming Machine.



The New Automatic Four-Slide Wire Forming Machine Built by the Baird Machine Company, Oakville, Conn.

gearing and slotted lever adjustment, and also with the friction which is considered to cause serious loss of power, rapid wear and resulting inaccuracies in the length of wire fed. To adjust the new machine it is simply necessary to loosen the crank pin nut, turn the adjusting thumbscrew and retighten the nut. For accurate feeding, positive stops are provided on the feed slide, held by a clamp, an arrangement simple and easy to set. The feed grip is operated independently; neither it nor the

improvement is the swinging former. Either a stationary or moving form can be used in the same bracket, which is a heavy, solid casting. The form holder is suspended from a pivot held forward to the wire line by a spring and carried back by the front tool until backed by the solid bracket; the motion is speedy and easy, as compared to that of a heavy slide. The form holder can be held back by a set screw to obtain a stationary form, or it can be removed and a solid form substituted,

clamped in place by the cap. A friction clutch pulley is provided with the machine, doing away with the need of a countershaft, and enabling the operator to try the operation slowly. The friction can be set so that any undue strain will stop the machine and prevent the breaking of tools. All adjustments are on the top of the machine and can be reached by the operator from a position in front.

The machines are built in six sizes, No. 0 to 5, working wire up to $\frac{3}{8}$ in. diameter and 15 in. long.

The Flather Rapid-Action 30-in. Planer.

The new 30-in. planer built by the Mark Flather Planer Company, Nashua, N. H., contains two important improvements, a two-speed mechanism in the bed and a new belt-shifting mechanism. Their purpose is to secure greater efficiency and utility and convenience of operation, under the conditions which have resulted from the general adoption of the high speed steels. A drum cam has been substituted for the common flat cam to secure a quicker, more positive action of the belt shifting mechanism. An unusual feature is the use of wide, heavy rim loose pulleys and narrow, light rimmed tight pulleys on the driving shaft, and a belt wider than the tight pulleys, which, overlapping upon the loose pulleys while driving, keeps them in motion utilizing their effect as a balance wheel.

Fig. 1 gives a general view of the machine, Fig. 2 a detail side view, and Fig. 3 a plan of the driving mechanism showing the method of getting the two speeds. Referring to the latter, on the pulley shaft are the two gears *b* and *c*, and on the intermediate shaft *d* are the two gears *e* and *f*, by sliding which the two cutting speeds are obtained, engaging *f* and *b* for the high speed and *e* and *c* for the low speed. On the end of the intermediate shaft is the gear *g*, inside the bed, for driving the third and fourth shafts in the usual manner. The return is accomplished by another train of gears entirely independent of those referred to. Fitted into the bed is the long quill *h*, forming a bearing for the pulley shaft, and also, at the part projecting from the bed, a bearing for two of the four pulleys necessary for the drive, namely, the return pulley and inside loose pulley. The drive is made up of two extra wide loose pulleys with heavy rims, and two of the usual width with very light rims. The pulley next the housing has a gear *i* cut on the hub and

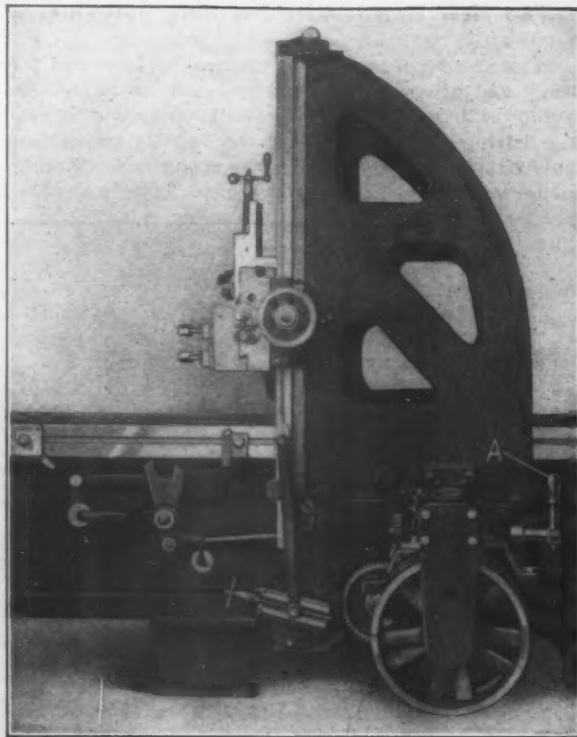


Fig. 2.—Detail Side View, Showing the Drive and Control.

revolves loosely on the extension of the quill. This gear meshes the gear *j* on the outer end of the intermediate shaft *d*, the ratio between them being such as to secure a quick return speed without the use of unusually large or small pulleys on the countershaft or pulley shaft. The pulleys on the pulley shaft are of equal diameter, and there is but a slight difference in the diameter of the countershaft pulleys, the variations in speed being obtained in the gearing.

The second pulley from the housing is loose, has a heavy rim, and a bearing on the long quill. The quill forms a stationary bearing for the two pulleys. The idea is to eliminate excessive wear, on the theory that heat and friction caused by the pulleys revolving in one direction and the shaft in another, at a high rate of speed, is an important factor, as an ordinary planer of

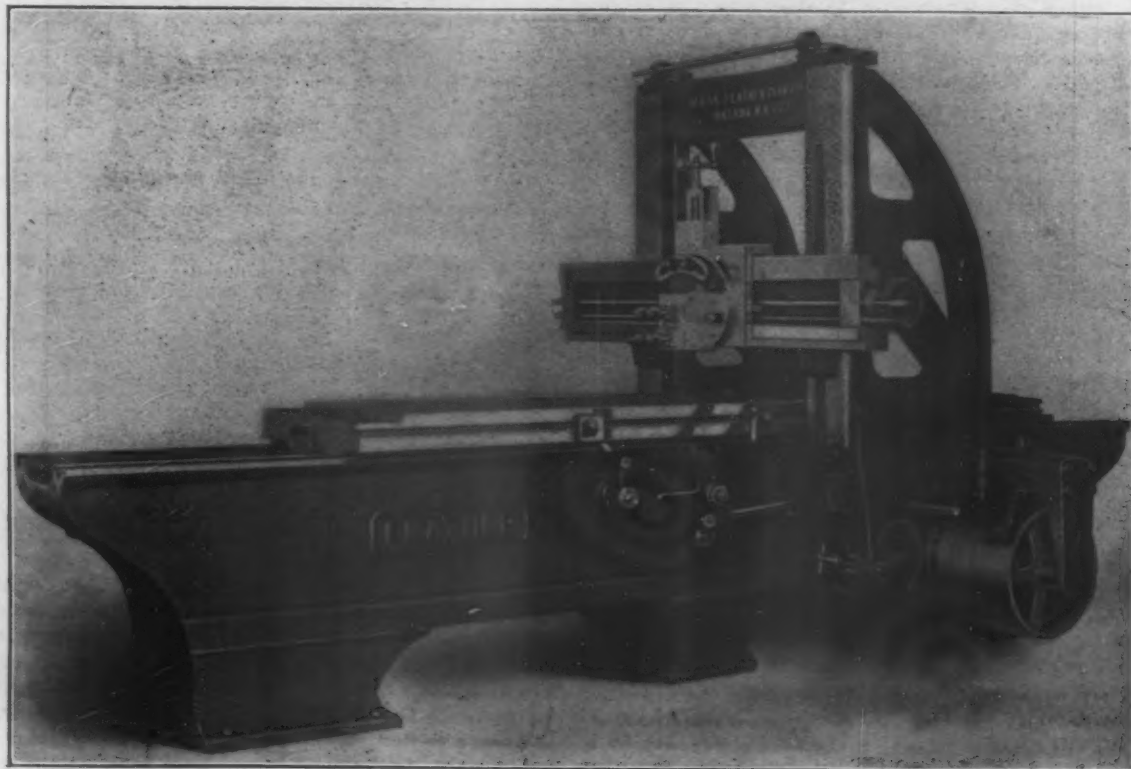


Fig. 1.—The New 30-In. Rapid Action Planer Built by the Mark Flather Planer Company, Nashua, N. H.

the same general type running at a high rate of speed totals almost half a million revolutions a day.

The third pulley is keyed to the end of the inner shaft and drives the planer for cutting, being the only pulley that has any bearing on, or that is attached to the driving shaft. The fourth is a heavily rimmed loose pulley revolving on a stationary bearing which is formed by a casting bolted to the outer end of the main part of the belt shifter casting and having a projecting hub in line with the pulley shaft.

The purpose of designing the pulleys of different widths and weights of rim is interesting. The designer aimed to give a powerful drive with unusually quick return, without causing the belts to slip, and incidentally eliminating the squealing and burning of the belts caused by the heat resulting from slipping of the belts while

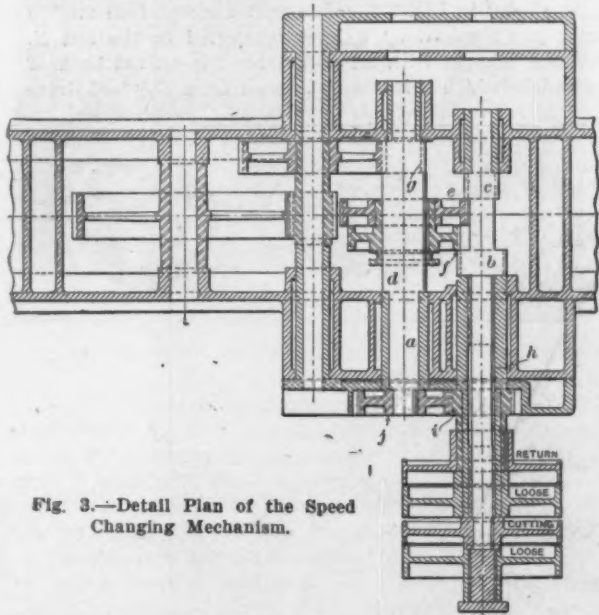


Fig. 3.—Detail Plan of the Speed Changing Mechanism.

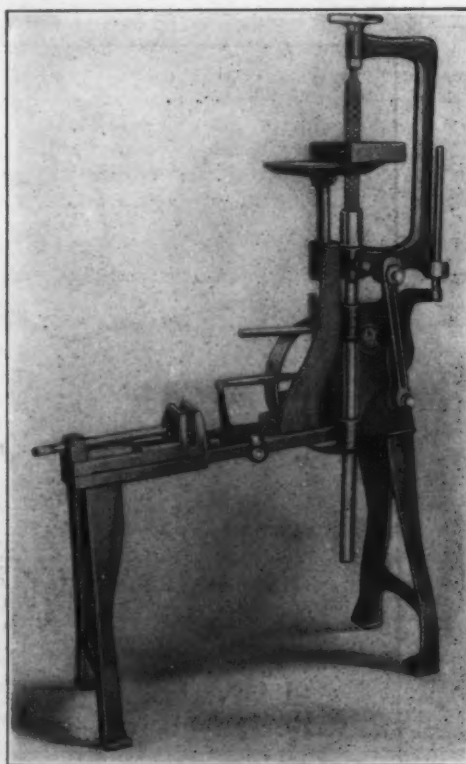
reversing. The tight pulleys are made of the regular width, in the 30-in. planer for a 2-in. belt. The loose pulleys are much wider and with thick rims that they may act as balance wheels. Belts 25 per cent. wider than usual are employed on the 30-in. machine and a 2¾-in. belt is used. Therefore, when the belt is shifted to the narrower pulley part of it remains on the heavy loose pulley, which acts as a balance wheel and assists in reversing as well as in carrying the cut through when bunches or hard spots are encountered in the work. The tight pulleys being so light, and only one being on the shaft, the reverse is very easy, as there is so little momentum to overcome. The drum cam has been adopted for this type of planer as being easier to operate and quicker acting than a plate cam.

The planer has cutting speeds of 26 and 45 ft. per minute, with a constant return speed of 120 ft. per minute. The sliding gears for changing the cutting speeds are operated by a rack connected to a yoke which fits a groove cut in the hub of the sliding gears. The rack is actuated by a gear on the end of the shaft, which is parallel to the housing, and projects a sufficient distance back of the housing so that a lever, A, Fig. 2, can be used to operate it.

The Deforest Sheet & Tin Plate Plant.—Ground has been broken for the new plant to be erected in Niles, Ohio, by the Deforest Sheet & Tin Plate Company. This company and the T. & T. Metal Roofing Company have been incorporated with a capitalization of \$10,000 each, and a third corporation known as the Basic Steel Company, with a capitalization of \$30,000, has been formed by the same interests. The Basic Steel Company will manufacture open hearth steel which will be rolled into sheet bars for use by the allied companies. It is not the intention to erect the basic steel plant this year. The incorporators of the three companies are Wade A. Taylor, C. S. Thomas, W. R. Thomas, W. A. Hutchins and G. P. Glimmer.

The Robertson Hack Saw Filing Attachment.

A filing attachment can now be furnished with or later applied to any of the regular No. 2 power hack saws made by the Robertson Drill & Tool Company, 1848 Niagara street, Buffalo, N. Y. Where there is much to be done in the way of filing flat work, such as dies, &c., this attachment is particularly useful. The attachment comprises a table for holding the work held in an arm mounted on the bed. The file is supported at the tang end in a hole in a threaded stud, which is adjusted with a knurled nut or small hand wheel. The other end of the file is held in a cone shaped cup that is set on a stud where the saw is ordinarily connected. All of the company's saws allow the frame to be operated in a vertical position, in which position they are locked by a clamp nut in the head casting. The frame can be adjusted to file square—i. e., at 90 degrees with the table, or at a



The Royal 1900 Power Hack Saw No. 2, with Filing Attachment. Made by the Robertson Drill & Tool Company, Buffalo, N. Y.

slight angle for filing the relief in dies. This attachment can also be used for cutting out centers in dies, &c. The machine complete with the filing attachment, as illustrated, weighs 185 lb.

A New Machine Tool Company at Cleveland.—The Wood & Spencer Company, Cleveland, Ohio, has been organized and will be incorporated with a capitalization of \$25,000 to manufacture machine tools. The men most actively interested in the new company are F. W. Wood and A. K. Spencer, president and vice-president, respectively, of the Cleveland Castings Pattern Company, which has just moved its plant to larger quarters in the Younglove Building, Euclid avenue and East Fifty-fifth street, where the plant of the machine tool company will be located for the present. The Wood & Spencer Company is placing on the market a horizontal tapping machine, invented by J. J. Grant of Cleveland. The company will also soon begin the manufacture of a cutting off machine, and later expects to add other tools to its products.

Thirty students from the Case School of Applied Science, Cleveland, Ohio, inspected the West Allis shops, Milwaukee, Wis., March 25, and later visited other plants in the vicinity.

The Newton 84-in. Rapid Production Gear Cutter.

A new design of spur gear cutting machine, Fig. 1, recently developed and placed on the market by the Newton Machine Tool Works, Philadelphia, Pa., has since been arranged with a circular table, as illustrated in Fig. 2.

The spindle of this machine, which is 4 in. in diameter and has a No. 6 Morse taper, is mounted on an auxiliary slide having independent hand cross adjustment for convenience in setting the cutter central. The spindle is driven by steel spur gears with coarse pitch teeth from a steep lead bronze worm wheel, driven by a hardened steel worm on a vertical shaft connected through spiral and spur gears to a two-to-one electric motor of 15 or 20 hp., according to requirements. The cutter arbor is arranged to be driven by a broad face key and is held in the spindle by a through bolt. The outer end of the cutter

taken from the main vertical driving worm shaft through intermediate gears at H and is transmitted to the change gears mounted on the swing arms shown at I, and further through the sleeve spur gears shown at J to the worm meshing with the table worm wheel. When the spindle saddle, which is counterweighted, has been returned to its highest position, the lever K is released and the clutch F engaged by the expansion of the spring L held to the proper tension by the lock nut shown. Engaging clutch F starts the entire indexing transmission through the friction index plate. The index plate is arranged with a slot having a hardened steel face, into which the indexing stop is inserted automatically at every one, two or three revolutions, or, in other words, the machine is arranged for single, double or triple indexing.

As shown in Fig. 2 the fast traverse and feed motion clutch are engaged by a lever connected to the rod N. This rod engages with an adjustable trip on the back of the saddle which releases the clutch from the feed drive

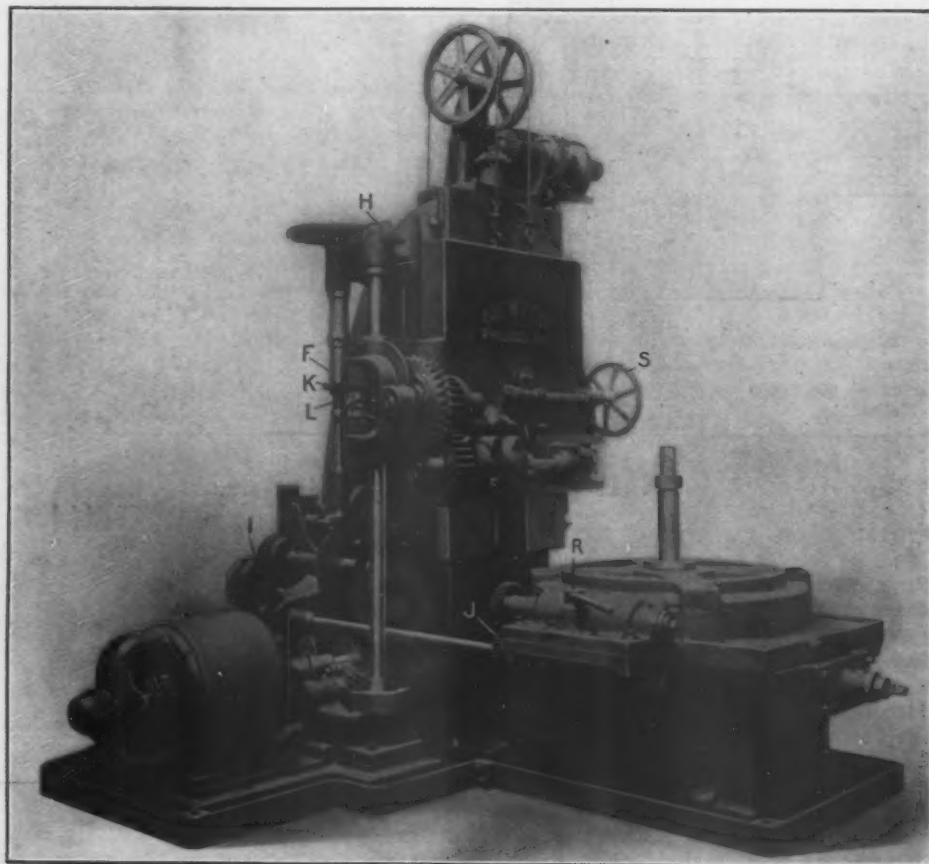


Fig. 1.—The 84-In. Rapid Production Spur Gear Cutting Machine Built by the Newton Machine Tool Works, Philadelphia, Pa.

bar is supported by a bearing which may be adjusted close to the cutters. The bushing in which the cutter arbor revolves has a parallel internal and taper external bearing with adjusting nuts to compensate for wear. Fine vertical adjustments are obtained by the hand wheel S.

For the fast traverse and feed to the spindle saddle power is transmitted through the shaft A to the right hand side of the machine, shown in Fig. 2, driving the shaft B through spiral gears for the fast traverse motion and the worm wheel on the driving shaft of the feed box for the slower feed motion. The feed is transmitted through a train of nine gears, the different combinations of which are engaged by latch pull pins, giving nine changes of feed ranging from $\frac{1}{2}$ to 8 in. per minute. The feed is further transmitted through the shaft C, at the upper end of which is a worm driving a worm gear running loose on the shaft D, on which the fast traverse gear also revolves. This transmission is engaged or disengaged by the clutch operated by the lever E.

On the rear of the saddle, as shown in Fig. 1, is mounted an adjustable trip arranged to disengage the table indexing motion clutch F when the saddle has returned to clear the work. The drive for the index is

to be engaged in the fast traverse by a spring roller latch operating on the lever N. The engagement of the fast traverse, however, is prevented by a safety latch on the lever N until after the indexing has been completed, when an eccentric plate mounted on the shaft O releases this latch, permitting the spring control lever N to engage the fast power return. The shaft O is connected to and controlled by the index plate shown in Fig. 1, which prevents any vertical feed until the indexing is completed. The lever E also is fitted with an auxiliary latch, which can be engaged with the rod M to prevent the vertical feed being engaged through any number of revolutions of the table. This is a very desirable feature, as many of the gears for which this machine was particularly designed are halved, and it is necessary to rotate the blanks in order to find if the teeth are properly located in relation to the joints.

The work table is 40 in. in diameter and has radial T slots for clamping the work, surrounded by a trough to catch the lubricant. The tables and saddles are so designed that the lubricant is carried directly through circular grooves in the table and saddle to the frame of the machine and returned to the supply tank, from which it is

again delivered to the cutters by a rotary pump. The dividing worm ring is in two sections to allow adjusting to compensate for wear. The driving worm has roller thrust bearings, and is fitted in a bracket which can be disengaged by the eccentric lever R.

Fig. 2 shows the later design of this machine in op-

the fact that all bearings except the two indispensable for the band wheels, are eliminated, the floor space required for the machine is reduced to a minimum.

To protect it against dust and mechanical injury the motor is fully inclosed and is located far enough above the floor to make all parts of the base easily accessible

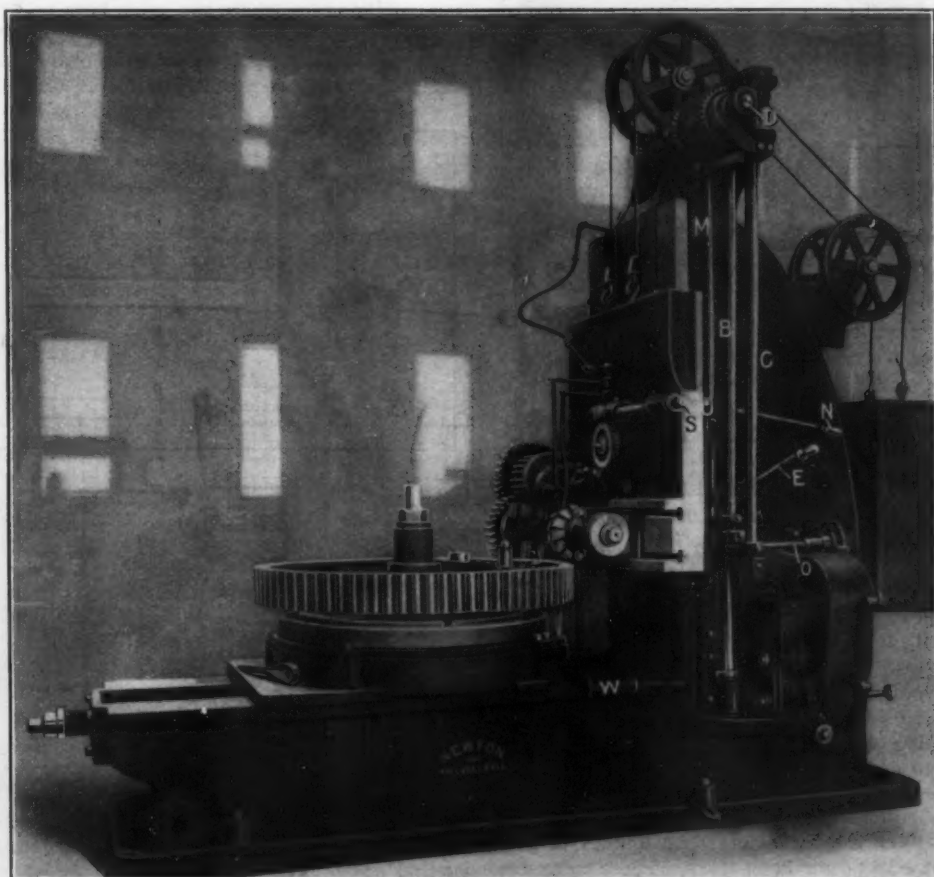


Fig. 2.—The Newton Spur Gear Cutter with Circular Table Attachment, Cutting a Large Gear.

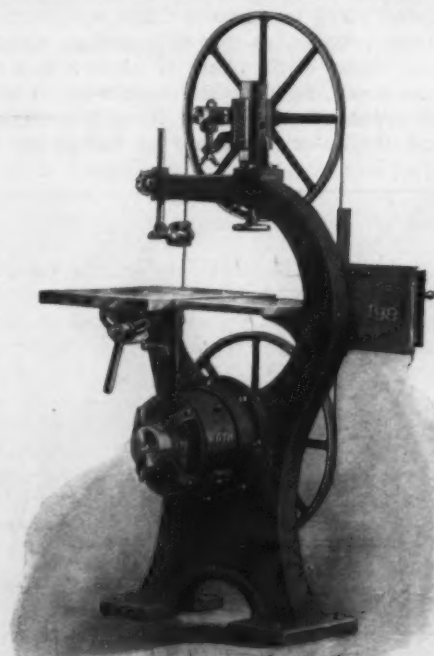
eration on a gear having 76 teeth of 2-in. circular pitch, two teeth being cut at one time at the rate of $5\frac{1}{2}$ in. per minute, which is the width of the face of this gear. One roughing and one finishing cutter are used simultaneously, so that at each indexing one tooth is completed. This machine was particularly designed for the rapid production of street railway motor gears, but has since been received favorably by the general manufacturing trade for their heavy class of gears. Many of these machines are used in cutting three-pitch gears three teeth at one time, in this instance being arranged for triple indexing. This machine weighs about 20,000 lb., and will occupy a floor space about 10 x 12 ft. over the oil pan on which it is mounted.

A Roth Band Saw Motor Drive.

Owing to the comparatively high speed at which most woodworking machinery operates, the application of direct motor drives presents less difficulty than in some of the slow moving types of machinery. The band saw, so much used in pattern making shops as well as nearly all other woodworking plants, is especially adapted to this form and application of motive power. One of the latest types of direct motor drive for hand saws has been brought out by Roth Brothers & Co., 439 West Adams street, Chicago.

The motor, as will be seen in the illustration, is bolted to the band saw frame by a supporting ring provided on the under end of the motor frame for that purpose. The lower band wheel is fitted to the motor shaft close to the bearing, which is made especially long to provide a firm seat for the shaft. The latter is of large diameter and carries brass rings which revolve with it, carrying oil from the oil chamber up into the oil grooves, thus furnishing uniform and constant lubrication. Besides

for cleaning. Motors of this type can be furnished for any desired speed or voltage, but for ordinary work, especially of intermittent character, the following are



A Band Saw with Direct Drive from a Roth Motor.

recommended: From 1 to $2\frac{1}{2}$ hp. motors for 20 to 24 in. band saws with a speed of from 500 to 600 rev. per min., up to 4 to 10 hp. motors for 40 to 42 in. band saws running at from 400 to 500 rev. per min.

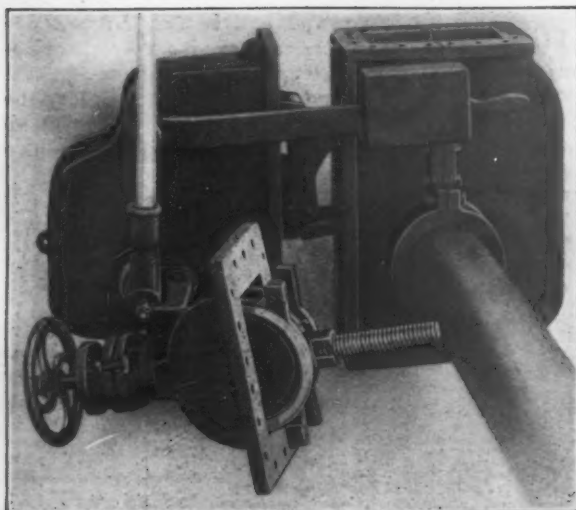


Fig. 1.—The Hoefer Valve Inserting Machine Partly Applied to the Pipe to Be Cut.

The Hoefer Valve Inserting Machine.

To insert a valve in a pipe line without breaking any joints or shutting off the pressure on the line would seem a very difficult if not impossible task. A machine which will do this work, and do it very expeditiously, with only a short interruption of the flow, has recently been brought out by the Hoefer Mfg. Company, Freeport, Ill. The necessity for it was suggested by a water works superintendent who had occasion to replace some old valves in the water system as well as insert some new ones. In connection with the machine, which cuts out a section of the pipe to permit inserting the valve, it was necessary also to develop a special valve. The work is done within a casing, which retains the liquid when the pipe is cut and becomes the body of the inserted valve.

The means of cutting are metal saw blades of the familiar sort used in power hack saws. These were decided on as being more efficient and economical than any other form of cutters for cutting off metal bars and pipe. They are cheap, can be easily replaced when worn out, make a very thin cut and can be handled by any ordinary workman. The illustrations show the various stages in cutting the pipe and finally the appearance of the completed valve in position. The equipment is of comparatively low cost, so that it is entirely within the reach of any water works plant, to which it is a highly desirable accessory, as it enables such work to be done without shutting off the water from the consumers. Shutting off the water is not only an annoyance, but it

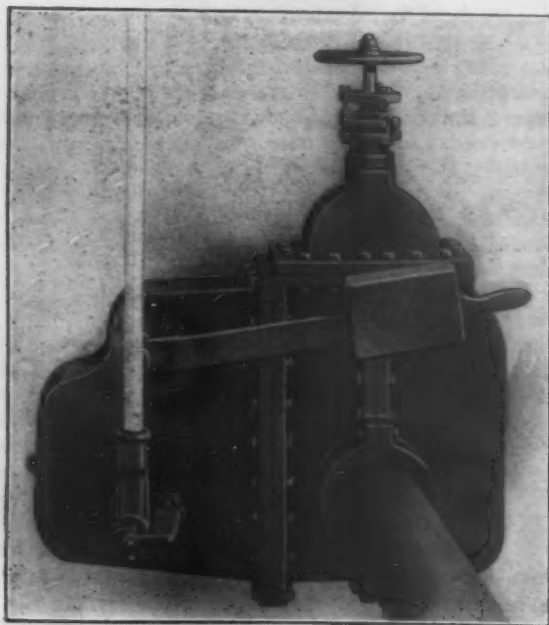


Fig. 2.—The Machine in Readiness to Cut the Pipe.

may also be dangerous in case of a fire. The machine should prove especially valuable where water systems find it necessary to install new hydrants, possibly replacing the old ordinary double nozzle hydrants with hydrants with steam nozzles.

The parts, as the illustrations show, comprise a sectional valve casing which is permanently secured on the pipe at the point where the valve is to be inserted. The casing consists of two sections, which are secured together fluid tight by bolts and the ordinary valve dome carrying the valve mechanism. The two sections have

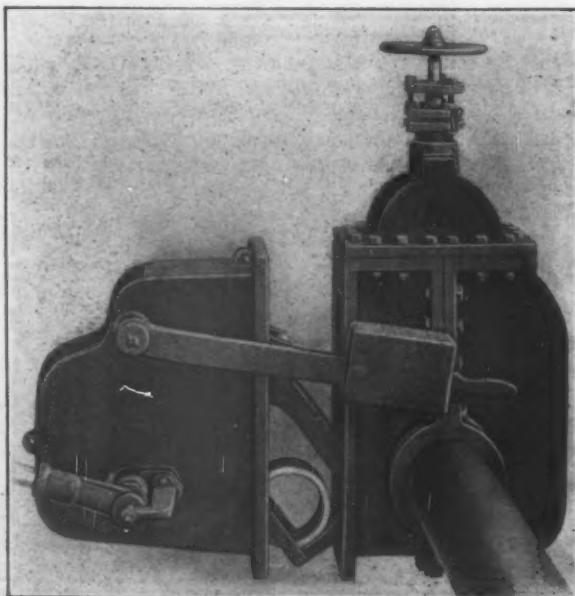


Fig. 3.—The Cut Completed and Cut Out Section Removed.

semicylindrical flanges to embrace the pipe. A fluid tight connection between the casing and the pipe is obtained in the usual manner, with a lead calked joint. The pipe cutting mechanism is carried by the casing as shown in Figs. 1, 2 and 3, which is temporarily attached to an open side of the valve casing in a fluid tight manner by bolts, so as to inclose the pipe cutting mechanism in the valve casing. After the two sections of the valve casing are permanently secured on the pipe and the saw casing with the saw mechanism temporarily secured to open the side of the valve, the saws are set with the blades equally distant from the valve seats and are operated until the blades have cut enough to insure their starting properly. Before the cut is made through the wall of the pipe the dome carrying the valve gate and stem is permanently bolted on top of the two sections of the valve casing as shown in Figs. 2, 3 and 4.

The pipe cutting mechanism consists of two parallel saw frames connected together by cross pieces, in which are attached metal saw blades especially made for the purpose. The reciprocating motion of the saw is obtained through a rocking shaft supported in stuffing boxes in the walls of the saw casing. On this shaft is keyed a crank arm to which the saw frames are connected by a link. On this same shaft extended through the stuffing box is attached a lever by which the



Fig. 4.—The Complete Valve.

saws are given the reciprocating motion and are fed through the pipe by an outside adjustable weight, which transmits its pressure to the saw blades, through a shaft and arm, to which a roller is attached bearing upon the saw frames.

When the section of the pipe between the valve seats is cut off it is withdrawn into the casing of the machine by swinging the operating lever downward, as shown in Fig. 3. As the saws cut through the pipe the valve casing, including the saw casing, fills with water. When the section has been cut out of the pipe and drawn into the casing, the gates of the valves are screwed down to their seats, thus shutting off the flow through the pipe. The valve and saw casings are then drained by opening a pet cock, and the water may be caught in a vessel and prevented from running into the trench. The saw casing with the mechanism is next removed from the valve casing and a plate forming part of the valve casing is permanently bolted to the open side of the valve casing, as illustrated in Fig. 4. It will be observed that the flow through the pipe is interrupted only while the machine is being removed and the plate substituted, an operation which consumes but a very few minutes.

The valve mechanism is of the common double gate expansion type, manufactured by the Ludlow Valve Mfg. Company, Troy, N. Y.

This machine is not only useful for inserting valves,

The Pacific Improved Billet Lathe.

For testing and truing billets in brass and copper mills the lathe shown in Fig. 1 is built by the Pacific Iron Works, Bridgeport, Conn. It is desirable to turn down the billets before they are put through the rolls, for the dual purpose of ascertaining if there are flaws or other imperfections and to remove the scale in order to reduce the wear on the dies; this machine is specially intended for the work.

The billet lathe is powerfully back geared from a two-speed cone pulley, additional changes being obtained from a two-speed countershaft. A positive gear screw feed is employed, with six changes effected by change gears. The billets are held in a chuck on the head spindle, and when hollow to be drawn into tubing, on a

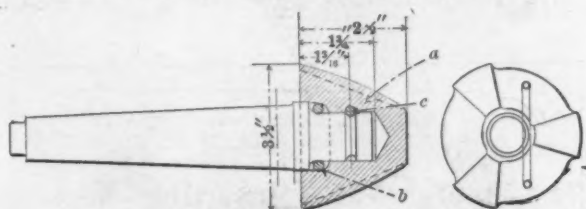


Fig. 2.—Detail of the Special Tail Center Used When Turning Hollow Billets.

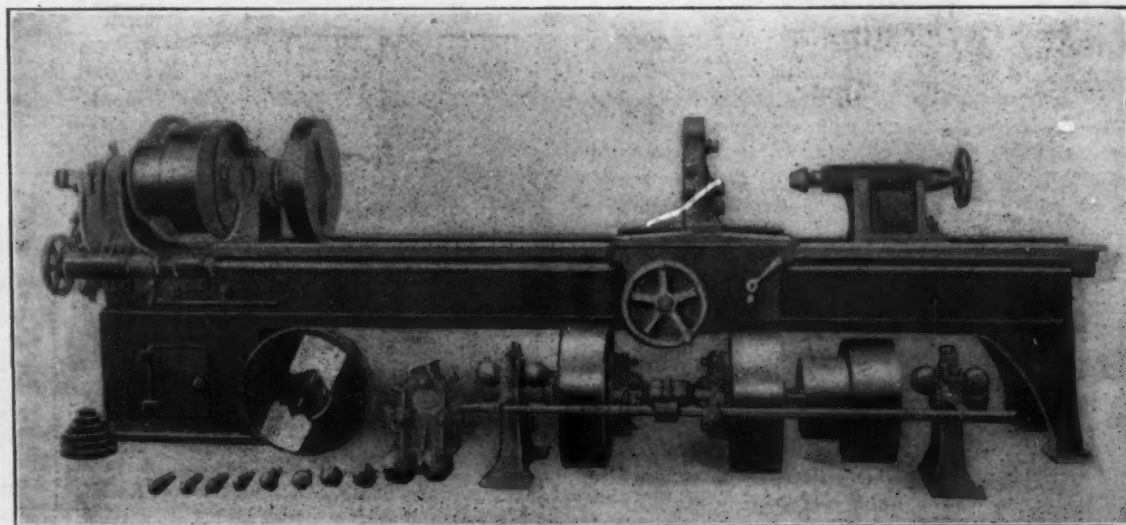


Fig. 1.—An Improved Billet Lathe Built by the Pacific Iron Works, Bridgeport, Conn.

but can also be used in every day shop work, where it is necessary to cut pipe, in which case one saw blade may be taken out and special pipe holders attached to the machine.

The Rutan Triple Duplex Valve.

A controlling valve for presses, hoists, elevators, cranes or other machinery operated by steam or hydraulic pressure, for reversing or stopping the flow of the working medium, is about to be placed on the market by the Rutan Triple Duplex Valve Company, recently incorporated at Elmira, N. Y. It is claimed to be the only valve which closes both the supply and exhaust at the same time, and when fully open has a port through the valve the full size of the pipe to which it is connected. The valve has only four parts, one of which is the handle. This has three positions, the two extremes of which are both open positions of the valve, but with the flow in opposite directions, and the central position is a closed one where both the supply and exhaust are shut off so that the piston of the cylinder controlled can be held at any position. The valve is so constructed that no packing is required and it can be set up in any position.

The first sheet of steel was rolled at the new plant of the Massillon Rolling Mill Company, Massillon, Ohio, March 23. A large part of the product will be consumed by the Canton Art Metal Company.

special tail center, details of which are shown in Fig. 2. The bulb *a* is arranged to revolve with the work on the ball bearings at *b*. The shank is solid in the tailstock. The pin *c* is employed to hold the bulb on its journal, the pin revolving in a groove in the center. The thrust is all on the ball bearings. The bulb has three bearing points, the rest of the stock being milled away, the purpose being to get a better average center, the castings being rough. The machine has an automatic stop, as seen in Fig. 1. It is furnished with two chucks and 10 tail centers, for different sizes of work. The weight is about 7000 lb.

The Hyde Park Foundry & Machine Company, Hyde Park, Pa., manufacturer of chilled and sand rolls, ingot molds and other castings, recently purchased a strip of ground lying between its plant and the Kiskiminetas River, on which it has erected a steel frame building, 50 x 100 ft., with a 25-ft. lean-to, to serve as a machine shop. The building is now being equipped with a 15-ton Morgan traveling crane, roll lathes, large slotter, planers, drill presses, lathes, &c., for the manufacture of rolling mill, steel works and tin plate machinery. Standard gauge railroad tracks will be laid in it to facilitate shipping. The company will then be able to increase its foundry floor space by the removal of some of the machine tools formerly located therein; its present available space being 80 x 280 ft., served by a 20-ton Northern and two 15-ton Morgan electric traveling cranes. It has a melting capacity of 80 tons per day.

The Graham Knurl Holder for Turret Machines.

A knurling tool for use in the turret heads of lathes, screw machines, chucking machines and the like, is a new product offered by the Graham Mfg. Company, Providence, R. I. It has a shank to fit in the turret in the usual manner, and a cross slide on which are mounted two movable arms which carry the knurls. The slide is a round bar on which the arms are adjusted through right and left threads on a screw connecting the arms. Each end of the screw is slotted to take a screwdriver. The arms are held from turning on the bar by a spline and feather, and when properly adjusted are securely clamped to the bar by screws. Fig. 1 shows the tool by itself, Fig. 2 the manner of using it in a lathe turret and Fig. 3 details of its construction.

The form of the device is peculiar and for a reason.



Fig. 1.—A Knurling Tool for Use in Turret Machines Made by the Graham Mfg. Company, Providence, R. I.

When at the proper distance apart, according to the diameter of the work, the arms are bound tightly to the bar and then the knurls are moved to the work after the manner of a screw die. It is not intended that the arms be moved in or out while the knurls are in working contact.

The tool will cover a comparatively wide range of work, and the knurls being set diametrically opposite one another do not put side strain on the part being operated upon. Another feature of considerable value is that the regular tool post is left free for putting in tools for doing peculiar operations which could not well be made to suit the turret head, or if so only at too great expense. As there does not seem to be much necessity for more than one size of the tool only one is made, but the shank can be any practical size. Stock goods have shanks 1 and 1¼ in. diameter. The capacity of the tool

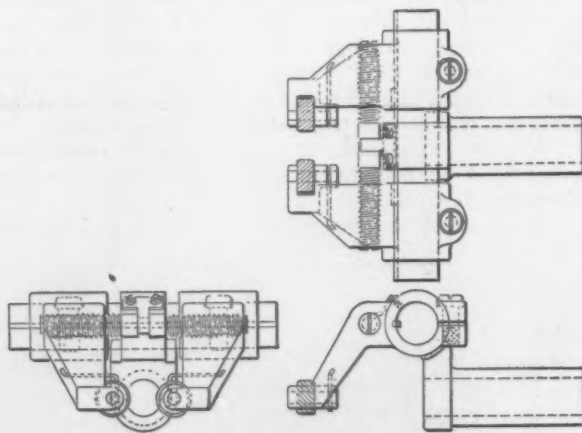


Fig. 3.—Details of the Graham Knurling Tool.

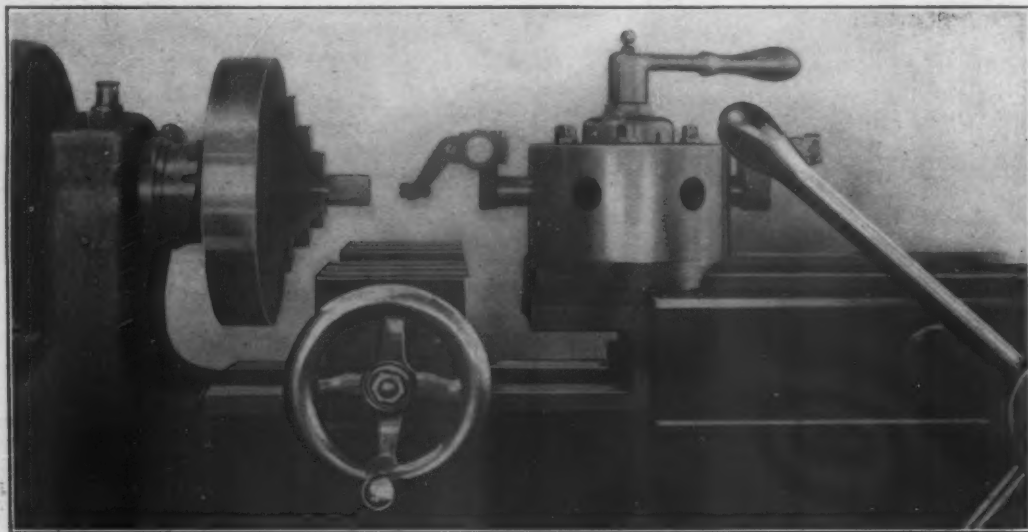


Fig. 2.—The Graham Knurling Tool in Use.

The first experimental design was symmetrical about the shank axis and had a square slide, but it was found that the projecting side was nearly always in the way of other tools. The offset pattern now used projects very little on one side of the axis, and by turning it some angle will be found where it seldom gets in the way. If nothing interferes anyway, the operator should turn it to such an angle as to allow the work to be readily seen. In the actual use of the device this feature will be found more important than it might at first seem. The peculiar construction also resulted in reducing the cost of making nearly one-half over the square corner construction.

The knurls themselves are standard, ¾ in. diameter, ⅝ in. wide with ¼-in. holes, and run on hardened pins which are notched and held in place by springs. The pins can be instantly removed and turned end for end to provide double wear. To set the knurls, the screws on the main slide, or clamp bar are loosened, and with a screwdriver the arms are moved in or out as desired.

as made at present is up to 2½ in. diameter and 2½ in. long, with a hole to allow stock up to ¾ in. diameter to pass clear through so that any length of that or smaller diameter can be knurled. The company has designed a holder similar to the one described but having four knurls in the two arms instead of two. This, however, cannot be used for work less than ⅝ in. diameter, as the knurls would touch one another.

Three steel vessels for the Chicago Lighterage Company are being built by the Manitowoc, Wis., Dry Dock Company at a cost of \$200,000, and eight more will be constructed upon the completion of that contract. This is the first year in which steel vessels have been built at the plant, the steamer United States, recently launched, having been the initial venture. The Dry Dock Company has also secured control of the Manitowoc Boiler Works and Gunnel Machine & Engine Works, enabling it completely to outfit steel boats.

The Reynolds Spur Gear Hobber.

A radical departure from anything of the character heretofore built is the spur gear hobbing machine now being introduced by the Reynolds Machine Company, Moline, Ill. The work is carried past the hob instead of the hob being traversed past the work, thus avoiding the necessity for securing and maintaining exact parallelism between the line of travel of the moving part and the axis of the stationary member. The head carrying the hob is fixed in position so that the driving of the hob is as simple as that of the spindle of a milling machine, there being no necessity for bevel gears, universal joints, or other device to compensate for a varying angle of the hob with the work. Figs. 1 and 3 show the opposite sides of the machine, and Fig. 2 a view looking down on it.

To make use of this construction and retain the proper relationship between the hob and the work, the hobs are made in sizes varying with the pitch, so that the thread angle of all the hobs is the same. When this reduction of size of hobs with the finer pitches makes the hob too small in diameter to be practical, multiple thread hobs are used to bring up the size to reasonable dimensions.

The work spindle is mounted in a carriage and is driven by a broad face spur master gear. This gear is

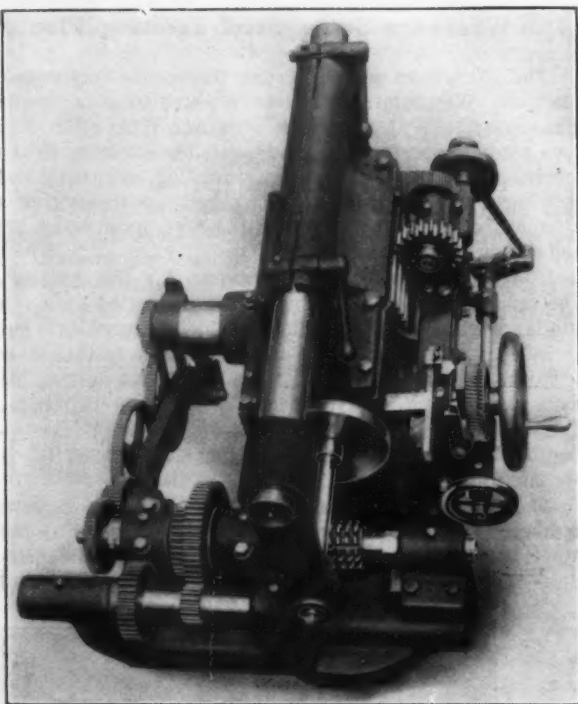


Fig. 2.—A View from Above the Reynolds Spur Gear Hobber.

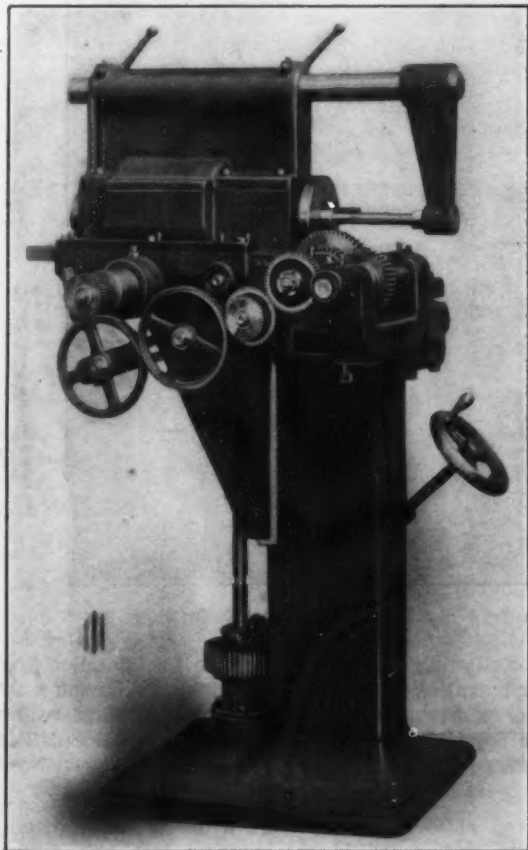


Fig. 1.—A New Spur Gear Hobbing Machine Built by the Reynolds Machine Company, Moline, Ill.

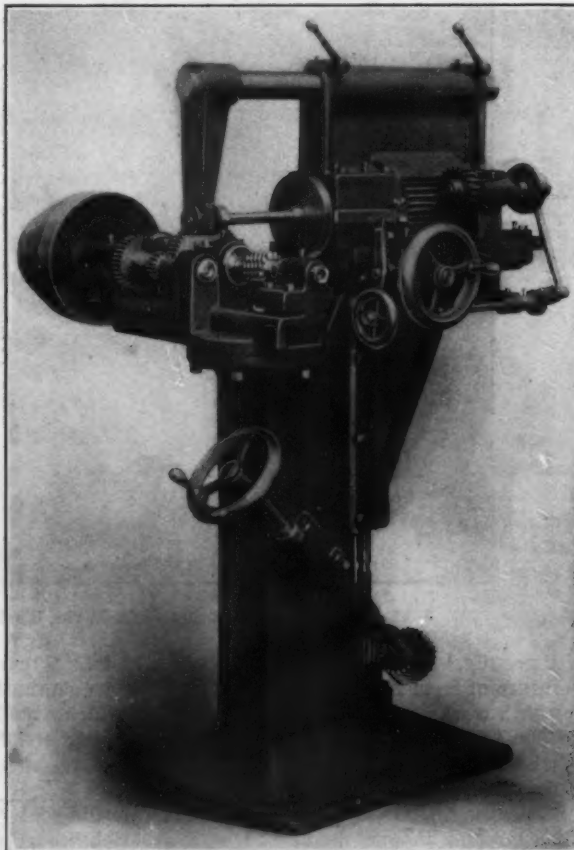


Fig. 3.—The Opposite Side of the Reynolds Spur Gear Hobber, Showing the Control of the Movements.

in turn driven by a worm of the same thread angle as the hobs. This makes the worm shaft and hob shaft parallel, and the matter of their connection to secure the proper rotary speed of the work is as simple as gearing the lead screw of a lathe. The carriage in which the work spindle is mounted is fed by two racks on the under side and pinions on a shaft fixed in the knee. This construction brings the thrust of the feed approximately in line with the thrust of the cut, being a little to one side on small gears and a little to the other on large gears. Naturally this tends to reduce the wear on the carriage and equalizes what wear there is, so that there is little chance of the carriage wearing loose in the middle. The work arbor has an outboard support, which greatly strengthens it and reduces the tendency to chat-

ter, which in many cases is the limiting factor in the quantity of work done.

The machine is simple in design and construction, has no parts likely to become deranged and is easily set up and operated by comparatively unskilled labor. It is driven by a three-step cone pulley for a 3-in. belt and is back geared, giving six changes of speed in geometrical progression. The machine is built with special reference to the use of high speed steel hobs and is guaranteed to drive them to their limit. The size now being placed on the market is capable of cutting up to 16 diametrical pitch in steel and 5 diametrical pitch in cast iron, any work up to 12-in. pitch diameter and 6-in. face, and weighs about 1400 lb. The company expects to manufacture other sizes within a short time.

The Washburn Shops Steel Treating Plant.

The Washburn Shops of the Worcester Polytechnic Institute, Worcester, Mass., have established a model plant for the heat treatment of steel. The effort has been made to secure the greatest possible efficiency in the several operations of hardening, annealing, tempering and case hardening, covering the best practice with all grades of steel from 15-point carbon to the high speed alloy air and water hardening steels.

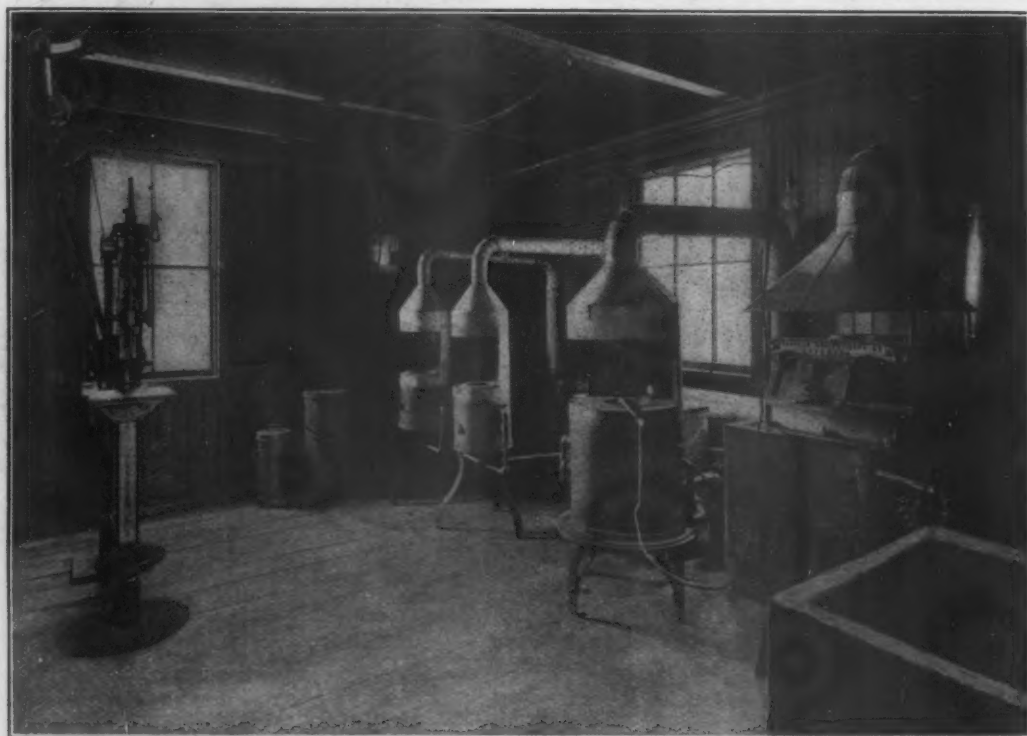
The room is sufficiently spacious for the purpose. The temperature and ventilation are controlled by a fan and large windows which admit subdued natural light but exclude the direct rays that are undesirable in this class of work. Shutters are provided to completely darken the room except for the rays of incandescent electric lamps. The walls are painted a dead black to prevent the absorption of the various colored rays when the operator is experimenting on color work.

The equipment includes five furnaces, which may be numbered from right to left. The first, furnished by the American Gas Furnace Company, is built on the principle of the muffle furnace. It is of the box type and

Ordinary city gas is the fuel used in all of these furnaces, but a change could be made to oil fuel if desired. All furnaces are furnished with hoods of convenient form, connected with an exhaust line, so that all poisonous fumes, such as those of lead, cyanide, barium chloride, &c., are carried away.

Rectangular tanks are placed in convenient position about the room, containing water and brine of various densities. All other baths, for various grades of oil and other cooling compounds, are kept in covered cylindrical galvanized iron tanks. An air jet is provided, having a pressure of 2 lb.

A complete equipment of measuring instruments is provided, including Bristol and Le Chatelier pyrometers and thermometers, covering a range of temperature between the limits of 0 and 2960 degrees F. On one of the walls of the room is the Bristol pyrometer, which is of the thermo-electric type. The scale is graduated to read direct in degrees. Leads from the instrument extend over the entire room, so that it is a matter of a few seconds only to connect with the thermo-couple and obtain any desired temperature. If any question as to the accuracy of the instrument, or the action of gravity on



A View in the Steel Treating Plant in the Washburn Shops of the Worcester Polytechnic Institute.

will readily heat a block of steel 8 x 4 x 14 in. A temperature of from 2000 to 2100 degrees F. may be obtained for such work as requires an even heat and which would be damaged by oxidation and the decarbonizing action of the air. Examples of such work are reamers, mandrels, taps and drills in their finished state.

Furnace No. 2 is known as the barium chloride heater. It is circular in form and lined with firebrick, and the chloride solution is heated in a crucible of fire resisting material. The furnace is of sufficient size to accommodate the ordinary run of tools, and treats those grades of steel which require a rather high temperature and at the same time must be well protected in heating. This form of heat treatment is well adapted to those types and forms of tools that tend to heat unevenly with such an unbalanced distribution of the shrinkage strains that cracks are likely to develop.

The No. 3 furnace is of similar design to the No. 2, with the exception that the former is made use of in connection with the lead bath, requiring a lower temperature than with the barium chloride, a typical use being with carbon alloy steel. Furnace No. 3, of the same general form, is for oil tempering, with either linseed or machine oil, and is used where the temperature required is between the limits of 300 and 630 degrees F.

its oscillating parts is advanced, a Le Chatelier pyrometer operating on the same principle, but having a vertical support, may be employed to verify first readings. The room also contains a Washburn sensitive drill and grinder for use in preparing test specimens.

One of the most important hydro-electric projects recently undertaken is the merging into one company, styled the Northern Idaho & Montana Electric Light Company, of the Pend d'Orielle Electric Company, Newport Light & Power Company, Flathead Valley Water Power Company, and Whitefish Electric Company. Current from these plants is largely used to operate mines, irrigation plants and other industrial operations, and it is proposed to extend their scope largely. Jerome L. Drumheller, Spokane, Wash., will probably be at the head of the new enterprise.

H. E. Mills and Oskar W. Scholz have formed the Shannon Engineering & Contracting Company, 602-3 House Building, Pittsburgh. The company will act as general consulting and contracting engineer and will deal in locomotives, track cars for industrial purposes, conveyors, hoisting engines, boilers, pumps, &c.

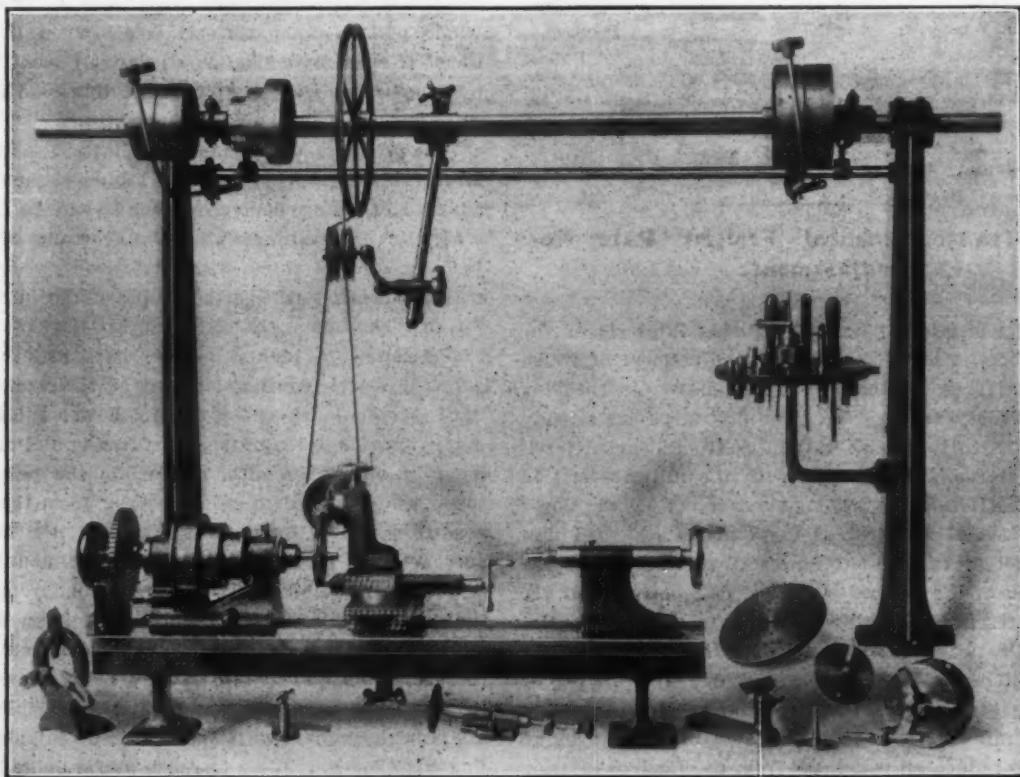
An Elgin Light Countershaft.

A mounted countershaft of improved design for driving precision bench lathes and small tools of other kinds has recently been brought out by the Elgin Tool Works, Elgin, Ill. In the engraving the shaft is shown in connection with an Elgin precision lathe, a product of the same concern. The shaft is here mounted on standards, but it may also be had arranged for mounting on the wall or ceiling. In both cases the countershaft hangers, which carry the shaft and pulleys, are supported on a main rod and held from turning by another rod

shops, &c., has removed its offices from the Curry Building to suite 716, Ferguson Building, Pittsburgh, where it has secured somewhat larger quarters.

The Royal Forming, Bending and Crimping Machine.

A hand power forming, bending and crimping machine for the use of ornamental iron workers, tinsmiths, lock makers, blacksmiths and machinists doing small repair work is made by the Royal Mfg. Company, 56 North Duke street, Lancaster, Pa. Its work is the bending of



An Improved Type of Countershaft Driving a Precision Lathe. Both Built by the Elgin Tool Works, Elgin, Ill.

beneath. These supporting rods may be any length desired; that is, they may be of sufficient length to support the shaft and pulleys for one machine or they may be extended the full length of the building to support any number of countershafts that may be required. The hangers and idler, as will be observed, are fastened to the main rod by clamps and the belt shifters to the auxiliary rod, and may be removed by taking out a few screws.

Countershafts are built for one, two or three speeds; the latter are generally employed for cutting screws on a bench lathe. By loosening the hand screw, the idler can be adjusted to any position desired, where it is held by tightening the clamp screws. When not in use the idler may be swung back out of the way of the operator, or moved to any point on the main rod between the cone and driving pulleys. The loose pulleys on the countershaft have patent self-lubricating bushings.

To obtain the best light for the operation of precision machines, such as bench lathes, bench millers, small drill presses and other tools, it is desirable that they be located in front of unobstructed windows. This object is attained by the attachment of the countershaft to the wall over a window or by mounting it on bench stands as shown when for any reason it is inconvenient to fasten it to the wall. The revolving tool rack may likewise be secured to the wall instead of to the bench stand as shown in the illustration. The cone pulleys driven by the one on the countershaft should have a speed of 120 to 600 rev. per min. The grinding pulley, which is 12 in. diameter, gives a speed high enough for grinding without an extra attachment. This pulley may also be used as shown in the engraving for driving a milling cutter.

The Standard Bridge Tool Company, builder of machinery tools and appliances for bridges and structural

small rings or curves in either square, channel, T, flat or angle iron or steel of a cross sectional area not exceeding $\frac{1}{4}$ sq. in., and it has the advantage over the anvil and hammer in that the work produced is smooth and free of the marks of blows. It is claimed that the work produced on this small machine is as perfect as that of any bending machine of larger size.

In addition to its function as a bender, the machine has an attachment which is used for plaiting soft steel



A Hand Power Machine for Light Forming, Bending and Crimping, Made by the Royal Mfg. Company, Lancaster, Pa.

of 1-16 in. thickness by 5-16 or even $\frac{1}{2}$ in. width, for use in elevator cars, office railings or partitions, &c. By substituting a pair of crimping rolls, shown in the illustration, in place of the intermediate gears, the machine can be used as a crimper, and will take soft steel of $\frac{1}{2}$ by 1-16 in., turning out such work as is used in grills, lamps and ornamental ironwork of various kinds.

THE IRON AGE

Established in 1855.

New York, Thursday, April 1, 1909.

Entered at the New York Post Office, as Second Class Mail Matter.

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| DAVID WILLIAMS COMPANY, | - | - | - | - | - | PUBLISHER |
| 14-16 PARK PLACE, NEW YORK | | | | | | |
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The Transcontinental Freight Rate Re-adjustment.

The commercial and manufacturing interests of the Pacific Coast are confronted by a readjustment of transcontinental freight rates which will have far reaching effects in the years to come. The first steps are already being taken to reduce all rail rates from Eastern territory to intermountain points, with the ultimate end in view of restricting the jobbing territory of Pacific Coast cities. Since the passing of the Panama Railroad into the control of the United States Government, and the completion of the Tehuantepec Railroad, competition via those routes has become troublesome to the transcontinental railroads, and the assurance that the Panama Canal will be completed within a few years has forced them to a serious consideration of means for protecting their all rail traffic. The plan which has been decided upon is to reduce all rail rates from the East to interior points, so that the effects of water competition will be restricted to a narrow fringe of territory along the Pacific Coast. The recent decision of the Interstate Commerce Commission in the Spokane case has proved opportune, as it clears the way for the first steps in this readjustment.

When the original Interstate Commerce law was enacted, the transcontinental roads were having a hard struggle for existence, owing to the undeveloped state of the territory west of the Missouri River, and a proviso was added to the long and short haul clause of the law for the purpose of exempting them from the rule that rates should not be higher for a less distance in the same direction over the same road. The Pacific roads continued to make whatever rates were necessary to their coast terminals to meet water competition, while they charged all that the traffic would bear to interior points. This plan of making rates was very favorable to the jobbing interests of the coast, as it enabled them to get goods from the East by rail, and ship them back several hundred miles at a total charge equal to the rate from the East for a direct haul to the ultimate destination. When the Panama Canal is completed, the Pacific Coast jobbers and manufacturers would be able to control the entire intermountain trade in competition with all rail shipments from the East, if the present structure of rates were allowed to stand.

The transcontinental roads would lose the long haul from the East to interior points, which pays the highest rates of any railroad traffic in the world, and is, from a statistical point of view, the most profitable traffic in the

country. By reversing their policy and making low rates from the East, with high rates from the coast to interior points, the competition of the Panama Canal will be localized to a large extent. The commercial traffic of the intermountain territory will be controlled by Spokane, Salt Lake and other interior cities, and the coast cities will find the Cascades an impassable barrier. The profitable east bound fruit traffic from the coast will remain in the hands of the rail lines, as the water route will not appeal to shippers of fruits, and the rail lines will also have the preference in high class merchandise freight in both directions. Their loss in traffic on the whole will be comparatively small when the Panama Canal is open for traffic, as a relatively small volume of existing traffic will be diverted if this readjustment of rates is carried through as planned.

The people of the Pacific Coast have expected to profit largely by the opening of the Panama Canal, but the advantages they will derive from it will be largely offset by the disadvantages that will grow out of this readjustment of rail rates, which is now in progress. The real beneficiaries will be the people of the intermountain States. They have scarcely begun to develop their vast resources, as the high rates they have had to pay have not only restricted the shipment of their products but have increased the cost of labor. Lower rates will give a new impetus to irrigation, dry farming and the development of mineral wealth, and while the people of the coast, who expected to gain the most from the great expenditure of the Government in linking the two oceans, may actually profit but little, the intermountain territory may ultimately show a gain in one year equal to the entire investment at Panama. This is an illustration of the far reaching effects of the development of cheap transportation. The State of New York created incalculable wealth for States a thousand miles inland by its investment in the Erie Canal, and the influence of the Panama Canal promises to reach as far inland.

When the Interstate Commerce Commission rendered its sweeping decision in the Spokane case a few weeks ago there were fears in some quarters that the commission had abandoned its conservative policy and might play havoc with the interests of the railroads by other radical reductions in rates. It is now apparent, however, that the orders of the commission in the Spokane and Denver cases are in harmony with the new policy which is to govern transcontinental rates. The interests of the railroads are, of course, paramount in any great question of rate adjustment, covering so vast a territory as is involved in this case, and the commission has been able to foresee the great advantages that will accrue to the nation as a whole, as well as to the transcontinental railroads, by a gradual lowering of the freight altitude of the territory between the Missouri River and the Cascades.

The use of special steel tools has become so general that commercial tempering and hardening plants have been established in some manufacturing communities, and the practice seems destined to grow. It has been found profitable by manufacturers who have tried it to employ the specialists and complete equipment of a modern plant rather than to attempt to do the work in their own shops. It is usually a department of a shop or factory, which is the more complete in its equipment and better served because other manufacturers help to bear the expense by giving it their patronage. The correct treatment of modern tool steels is, of course, essential to their success, and the steelmakers have spent large sums

of money in educating workmen to that end. It is quite natural that the work should come to be concentrated, with specialists to oversee it, rather than dabbled in by men who are often costly in their failures.

The Steel Corporation's Share of Steel.

The increase in the United States Steel Corporation's steel making capacity is one of the most striking things brought out in its recent annual report. In the 18 months preceding March 16, 1909, the date of the report, it is stated that the subsidiary companies increased their open hearth capacity by 3,052,000 tons a year. Such an addition to the country's steel making capacity becomes significant when it is said that it exceeds the entire open hearth steel output of the United States in the boom year 1899, when the total was 2,947,316 tons. These additions of the Steel Corporation's subsidiaries, apart from 1,000,000 tons in the two 14-furnace units at Gary, Ind., were at existing plants—chiefly at Duquesne, Youngstown, Lorain and Ensley. In the case of the Ensley plant the Steel Corporation acquired about 500,000 tons of open hearth capacity in the purchase of 1907, but, by the completion of work under way at that time and by new construction undertaken last year, there has been added about an equal capacity in large furnaces of the most modern type, operated in conjunction with Bessemer converters.

It is remarkable that at a time when other steel companies had practically no extension work on hand, apart from that carried on by one important producer in the Pittsburgh District, there should have been an increase in open hearth plant of the Steel Corporation equal to 27 per cent. of the record open hearth steel production of the country, made in 1907, and to 40 per cent. of the entire open hearth production of 1908. It should be noted that a portion of the additions referred to above replaces Bessemer capacity at Duquesne, amounting to 746,000 tons, so that the net increase in the Steel Corporation's steel making capacity in 18 months is 2,306,000 tons. Attention is called in the annual report to the fact that the Steel Corporation has not increased its capacity for the production of steel ingots as rapidly as have other steel companies, taken as an aggregate. The percentage of Bessemer and open hearth steel produced by the Steel Corporation's subsidiaries since 1901, when they were brought together, is shown in the following table:

Percentages of Output of Steel Ingots in the United States Produced by the United States Steel Corporation.

| Year. | Percentage of Bessemer. | Percentage of open hearth. |
|-----------|-------------------------|----------------------------|
| 1901..... | 70.1 | 58.8 |
| 1902..... | 73.9 | 52.4 |
| 1903..... | 72.0 | 51.0 |
| 1904..... | 69.0 | 50.4 |
| 1905..... | 67.4 | 51.4 |
| 1906..... | 65.7 | 49.5 |
| 1907..... | 64.8 | 48.0 |
| 1908..... | 66.3 | 48.6 |

The country's total output of Bessemer steel ingots and castings last year was 6,116,755 gross tons, of which the Steel Corporation produced 4,055,275 tons. The total of open hearth steel was 7,780,872 tons, of which the Steel Corporation produced 3,783,438 tons. It might be assumed that with so large a falling off in the demand for Bessemer rails last year, the Steel Corporation's percentage of the total of Bessemer ingots would have been less than in 1906 and 1907. However, the important percentage of certain of the lighter Bessemer products contributed by the corporation, particularly in wire, tubes, sheets and tin plates, more than compensated for the loss of Bessemer rail tonnage. It may be assumed that the percentage for 1909 of Steel Corporation ingots will be

greater than the average of the past three years. The very large additions built in the past 18 months are not represented in the 1908 percentages of production. But in view of the policy recently adopted by the corporation in the effort to secure its share of the going business in all lines, it is not likely that the next annual report can say, as have those of recent years, that the independent companies have become relatively more important collectively than have the Steel Corporation's subsidiaries. In time the question of ore reserves may become a larger factor in extensions of blast furnace and finishing plant. Naturally, as the line becomes more clearly drawn between interests having an ample ore supply and those not so well equipped against the future, the increment in facilities for converting ore into finished forms will come more and more from the former.

Fire Losses in Machine Shops.

The question has been raised in connection with the adjustment of fire losses on machine tools as to the equitable basis of settlement where fire in a machine shop causes total or partial loss on its equipment. In common with cases of loss to new machinery, a subject discussed in *The Iron Age* of March 25, the insurance companies are rarely inclined to yield to the contentions of owners as to the extent of the damage sustained. If machinery is destroyed they reckon their settlement on the basis of a low inventory valuation, taking the ground that the equipment was rated as second-hand, and consequently would have brought much below the new value in the market. On the other hand, if the loss is only partial, if the flames did not actually reach the tools, it is the custom of the adjusters to place the valuation before the fire too low, and that after the fire too high, making the limits controlling the settlement as narrow as possible.

Many owners of machine shops who are sufferers by fire do not realize, and therefore do not take advantage of, the conditions as they exist in the machine tool trade to-day, in values of machinery and in the skilled knowledge of those values possessed by experts. An inventory of equipment taken before a fire, or made up from the books after the fire, affords a basis upon which sufficiently exact values can be estimated by men whose business gives them intimate acquaintance with the subject. The values of used machinery have come to be well established. They may range up and down with the market, in this respect differing from new machinery, the prices of which have been well maintained during recent years. But a second-hand machine has a pretty well defined value at all times. Each make of tool is known, together with the relative values of the product of the builder's works, according to the year of its manufacture. This subject was treated in detail in *The Iron Age* of January 14, under the caption of "Machine Tools as Loan Collateral." In banking circles it is well established that machine tool equipment has a much higher value as security for loans than was the case a decade ago, for the reason that under forced sale it brings better and dependable prices.

The market value of a lot of machinery before a fire can be estimated intelligently by the expert, tool for tool, through the list included under the insurance policies. If the building and its contents are destroyed it does not matter; the inventory is coupled with the knowledge of the specialist working on known facts as to the make and age of tool, the work for which it has been used, &c., affording a combination that gets close to true figures. The expert can estimate closely the value left in machin-

ery that has suffered by fire. If the equipment is modern, the shrinkage must be large, even if no heat reached the machinery, for water can do great damage, especially when coupled with exposure due to openings in the buildings, and, in the cold months, when most fires occur, the lack of heat, resulting in the freezing of the moisture. Machine tools that have stood under an open roof, or with walls and windows burned out, soaked with water which perhaps has frozen before workmen could get to work cleaning up, have lost a lot of their usefulness. Accuracy is often destroyed and productive lives are shortened. The actual loss to the owners is greater than the insurance adjusters can realize. The machinery expert, the man whose business is buying and selling machinery, new and second-hand, is the one really competent judge. Such a one, selected by both parties to the adjustment to make an unprejudiced report on the loss, would probably give to the insured a greater allowance than the insurance companies would believe existed, but it would be a fair award.

There are many points that must be taken into account, and which none but a man trained in machinery values is competent to handle. High-class machines that have been through a fire may still have value, but be useless for the purposes of their owner, and must therefore be replaced by new tools. The limits under such conditions should be the value before the fire and the price obtainable afterward. Or, it may be that only scrap remains, though to the uninitiated a machine may appear to have retained much of its usefulness. Machine tools are unlike most other classes of machinery. They are tools of precision. Most of them are made to produce within exceedingly narrow limits. Slight distortions may ruin them entirely, or reduce their scope to the rougher operations for which cheaper grades of tools would ordinarily be employed. Even the common run of machinery is built of the best materials fashioned by the most exact tools operated by expert mechanics, in the effort to get as near perfection as practicable. Shrinkage in values may be tremendous from much less cause than the harsh treatment of a fire.

Merchandise imports increased so heavily in February that they came within \$7,400,397 of equaling the value of the exports. The total value of imports was \$118,635,807, against \$103,607,620 in January. In February, 1908, the imports reached a total value of only \$84,752,651. The cause of the great increase in last month's imports was undoubtedly due to the hastening of shipments by interests anticipating changes in tariff duties which would be unfavorable to them. A drop from an excess of exports of \$46,925,410 in January to only \$7,400,397 in February is a most remarkable development. Government officials state that the heavy import movement has continued through the past month.

The New Haven-Pennsylvania Connecting Bridge.—A New Haven, Conn., dispatch refers to a conference between officers of the New York, New Haven & Hartford and the Pennsylvania railroads concerning the connection which is to be built between the two roads by way of the four-track bridge over Hell Gate. The cost will be shared equally by the New Haven and the Pennsylvania roads through the New York Connecting Company, and is estimated at about \$25,000,000. The bridge, including the steel approaches, will be about 1½ miles long, with a central span above Hell Gate of 1000 ft., 135 ft. above the water. It has been decided to substitute steel for the expensive granite piers provided for in the original plans, and in all about 100,000 tons of structural steel will be required. It is stated also that plans for a New York subway will soon be filed by the New Haven road. These

involve the construction of a subway running from the terminus in the Bronx of the New Haven's Harlem River branch line down the east side of Manhattan to a point within convenient reach of Wall street, where there will be a loop.

A European Spelter Pool.

German spelter makers have organized a pool, which the majority of Austrian, Belgian, French, Dutch and English works have joined, the object being to keep production within bounds. The syndicate has been formed for two years, dating from January 1, 1909. Three groups have been established, each of which has its own organization. Group A, which includes 18 German, Austrian and Dutch companies, has been organized under the title of Zinkhuettenverband, G.m.b.H., with a capital of 2,047,000 marks. This group is limited to a production of 255,700 tons for the current year, and to 264,200 tons for 1910. Group B, which embraces 10 Belgian and French plants, has an allotment for the current year of 176,000 tons. The seven English works constitute group C, whose production has not yet been fixed. It will probably be 55,000 tons. The syndicate, therefore, controls about 485,000 tons, of which about 85,000 to 90,000 tons are consumed by the companies themselves in the manufacture of sheet zinc. This is equal to about two-thirds of the world's production, including the United States.

The members of each group may readjust allotments of production among themselves, provided the total of the group does not exceed the total allotment. Restriction of output is ordered when the average price of spelter has been below £19 per ton for ordinary brands during an uninterrupted period of six months. This period of six months begins with the last day of the month during which the month's average has been below £19. If the average price is £19 or above during the succeeding month then the six months' period is regarded as interrupted. A reduction in output takes place when the total stocks have increased during that period. Works which exceed the allotment of output must pay 80 marks per metric ton. Delegates control the figures of output.

The syndicate may be dissolved at any time on one month's notice as soon as European works not members of the syndicate, or newly established plants, bring about an increase of production which amounts to more than 2 per cent. of the total output. In Germany the Georg von Giesche's Erben, with an estimated annual output of 30,000 tons, is outside of the syndicate. The selling is in the hands of Beer, Sondheimer & Co. of Frankfurt, a.M., and Aron Hirsch & Sohn, Halberstadt, for group A. The syndicate has distributing offices at Kattowitz, Silesia, and Cologne.

Iron and Steel Production in Sweden in 1908.—The Swedish Iron and Steel Works Association has published the following statistics of production in Sweden in 1908: Pig iron, 563,300 metric tons; blooms, 148,500 tons; Bessemer ingots, 79,500 tons; open hearth ingots, 347,600 tons. In 1907 the production of the above products was, respectively, 603,400 tons, 177,100 tons, 82,000 tons and 361,000 tons. The exports of iron and steel products in 1908 were 313,100 tons, against 399,500 tons in 1907. The plants in operation in 1908 and 1907 were as follows: Blast furnaces, 91 in 1908 and 109 in 1907; puddling furnaces, 209 and 258; Bessemer converters, 19 and 17; open hearth furnaces, 53 and 54.

Theodore Butler, Ltd., 149 Queen Victoria street, E. C., London, England, has been appointed European representative of the Royersford Foundry & Machine Company, Philadelphia; the W. N. Durant Company, Milwaukee, Wis.; the Buckeye Jack Mfg. Company, Louisville, Ohio, and the Oswego Tool Company, Oswego, N. Y.

Gulick, Henderson & Co., Pittsburgh, chemists and inspecting engineers, have received a contract calling for the inspection of about 30,000 Schoen steel wheels, ordered by the Chicago street railroad interests.

A Departure in Buying Methods.

Advertising a List of Requirements, to Minimize Office Details, Results Advantageously.

An advertisement which appeared in *The Iron Age* of March 18 and two other trade journals, calling for bids on material and supplies aggregating thousands of dollars in value, to be used in the plants of the Maxwell-Briscoe Motor Company, Tarrytown, N. Y., attracted no little attention in the selling world because it was something of an innovation in purchasing agent methods. Speculation as to the reason for inserting such an advertisement was rife in some quarters, where it was pointed out that a series of circular letters, such as purchasing agents send out inquiring whether the recipient wants to offer a bid on the equipment, or copies of the specifications covering the requirements, would have brought plenty of responses. To others some of the advantages of such a plan were apparent. The requirements advertised ranged from an item calling for 1000 tons of soft steel bars through a list including steel, brass and aluminum castings, tool steel, tubing, hot water hose, 1,000,000 steel balls, bolts, nuts, forgings, 50,000 drop forged wrenches, 10,000 oil cans, 20,000 files, &c.

It can easily be seen that a large amount of correspondence would have been necessary to notify the various manufacturers of the purchasing agent's desire to obtain bids on such a varied assortment of material, and the probability of his getting a good idea on the general market situation and a fair estimate of the probable cost of filling the requirements listed was evident. It was pointed out that giving such wide publicity to the wants of the motor company might unearth some bidders who might have not been reached by letter, and who were prepared to offer particularly advantageous terms in furnishing some of the material to be desired. The advertising plan was altogether such a wide departure from the methods of purchasing agents for large buyers, especially those employed by railroads, that the probable results caused much speculative discussion.

The material advertised for is required to fill the company's 1910 production schedule, and will be used in its plants at Tarrytown, N. Y.; Pawtucket, R. I., and Newcastle, Ind. A. R. Gormully, purchasing agent for the company, evolved the plan to advertise for bids, and so far, he states, it is working out satisfactorily. While letters asking some of the manufacturers, with whom the company has been doing business before, to offer bids were sent out as usual, Mr. Gormully conceived the idea that as soon as his list of requirements was completed an advertisement explaining them might result in his getting an early grasp on the multitudinous details connected with the filling of such a varied assortment of supplies, which even a large and well organized purchasing agent's staff might have considerable detailed labor in working out. Within a week after the insertion of the advertisement nearly 200 replies were received, and from them the purchasing office was enabled to figure out a fair estimate of what it would cost to fill all of the requirements. The answers also disclosed in just what lines the purchasing agent might look for competitive bidding, and, of course, made it apparent where material was being sold at rock bottom production prices.

Mr. Gormully learned that in the purchasing of raw material, such as soft steel bars, malleable iron, sheet steel, &c., there would be but little competition, and consequently he was enabled to direct his efforts toward securing the best possible delivery terms, as the prices offered in most cases were fairly uniform. In the matter of aluminum, brass and steel castings, chrome nickel steel and other specialties, the prices secured were more varied and the terms as to deliveries differed largely. These conditions also prevailed in the offers made by those desiring to sell twist drills, machine screws, wood screws, &c., and a competitive market was shown in the bids for completely manufactured hardware articles, such as oil cans and guns, drop forged wrenches and hot water hose.

To acquire the general knowledge of market conditions covering such a large list of equipment ordinarily occupies several weeks, and Mr. Gormully has no doubt that he has saved himself a vast amount of correspondence and several weeks' time as the result of his innovation. In accordance with his expectations, there were a number of replies from firms, such as new manufacturers and others, and who for some reason were not on his usual mailing list, with whom he will probably be able to do business to better advantage than he could elsewhere. Of course, in many cases manufacturers wrote asking for specifications, but there were numerous replies, especially among manufacturers of material which is more or less standardized, in which direct bids were made, and some of this business may be closed without further correspondence beyond the placing of the order. As yet Mr. Gormully's staff has not tabulated the various bids thoroughly enough to get an exact idea of the range of prices asked by the numerous bidders, but later on all these details will be worked out, and they will show, Mr. Gormully believes, that his scheme of advertising for bids has many merits from a purchasing agent's point of view.

Award of the John Fritz Medal.

Charles T. Porter, retired, now living at Montclair, N. J., honorary member of the American Society of Mechanical Engineers, is to receive the John Fritz medal for 1909. The Board of Award, which consists of four members of each of the national engineering societies, has selected him for this honor because of his work in advancing the knowledge of steam engineering and his improvements in engine construction. The ceremony of presenting the medal to Mr. Porter will take place in the Engineering Societies' Building, New York City, the evening of April 13, and will be participated in by the members of the four national organizations of engineers and their invited guests. Addresses will be made by representatives of the four groups of the profession, as follows: "The Debt of Modern Industrial Civilization to the Steam Engine as a Source of Power," by Dean W. F. M. Goss, University of Illinois, member American Society of Mechanical Engineers and American Institute of Electrical Engineers; "The Debt of the Modern Steam Engine to Charles T. Porter," by Prof. F. R. Hutton, Columbia University, honorary secretary American Society of Mechanical Engineers; "The Debt of the Era of Steel to the High Speed Steam Engine," by Robert W. Hunt, Chicago, member American Society of Civil Engineers and past-president American Society of Mechanical Engineers and American Institute of Mining Engineers, and "The Debt of the Era of Electricity to the High Speed Steam Engine," by Frank A. Sprague, New York, member American Institute of Electrical Engineers and American Society of Civil Engineers. The Committee of Arrangements for this joint meeting comprises Henry R. Towne, chairman; Charles Kirchhoff, Charles Warren Hunt, Schuyler Skaats Wheeler and F. R. Hutton.

According to *L'Electricien*, Japan is now in a position to supply all the calcium carbide requirements in that country. A company with a capital of \$300,000 has erected a power station on the Soki Falls near Kagoshima, where a force of 10,000 hp. is available. An enlargement of the works is contemplated so as to produce calcium carbide for export. The requirements for Japan are estimated at 90,000 kg. monthly. Two qualities are now on the market, the better grade costing 40.8 centimes per kilogram (3.7 cents per pound), and the inferior, which cannot be used for lighting purposes, 16.6 centimes per kilogram (1½ cents per pound).

At a meeting of pig iron manufacturers of the Central West, held in Cleveland last week, a resolution was adopted protesting against the provisions in the Payne tariff bill admitting iron ore free, reducing the pig iron duty from \$4 to \$2.50 and reducing the scrap duty from \$4 to 50 cents a ton.

OBITUARY.

Matthew Morton.

Matthew Morton, founder and president of the Morton Mfg. Company, Muskegon Heights, Mich., died March 10 from pneumonia, aged 73 years. He was a self-made man. A passion for mechanics and the development of new ideas and improvements in machinery characterized his life, and he was actively engaged in his business pursuits up to the Saturday preceding his illness.

He was born in Ayrshire, Scotland, and came with his parents to America in 1844, settling on a farm in Macomb County, Mich. While on the farm he would go to Romeo, 7 miles distant, to market, and generally spent a little time in a machine shop making parts for a foot lathe, taking them home and storing them in the woodshed. After a time it was ready to assemble, and one rainy day he completed the lathe, quite to the displeasure of his parents, who did not take kindly to mechanics; but it served its purpose and helped to do the repair work in the community. After attaining his majority he moved to Armada Village, and with his foot lathe started in business. A year later he moved to Lapeer,



MATTHEW MORTON.

Mich., at that time a frontier lumbering town, and engaged in the steam engine business, under the name of the Lapeer Steam Engine Works. He constructed in 1861 his first engine, making the patterns and molding them and melting the iron in a home-made cupola and machining and erecting it, executing the work unassisted. His record in building engines of very economical steam consumption was made and a good growing business was established.

In 1866 he formed a partnership with the late William McDonald. In 1871 he disposed of his interests in Lapeer to Mr. McDonald and moved to Romeo, Mich., where he again entered the business of building engines. While here he built his first marine engine, and it operated with such economy and was so satisfactory that the contracting parties made him a present of \$100. He also made a portable machine for boring cylinders, and by hand bored out four locomotive cylinders in 20 hr.

From 1875 to 1878 he was in business in company with A. Hamblin, in St. Clair, Mich., building and repairing steam engines, both machine and stationary. Returning to Romeo, where they engaged in manufacturing agricultural implements, depression in business and financial reverses caused Mr. Morton to start the second time in business on a foot lathe. At this period he produced the first successful keyseater to cut with a single tool, and it proved to be the correct principle for cutting keyways,

and the developments from time to time were such as to require machines to be built large enough to cut keyseats up to 6 ft. long and 6 in. wide. In 1887 he brought out the Morton portable slotter and planer, which was the first machine used in the Pittsburgh District for planing the feet and windows of roll housings. The machines proved valuable for heavy work and have since been sold to parties in the manufacture of heavy machinery in this and foreign countries.

In 1891 Mr. Morton, with the other members of his company, moved to Muskegon Heights, Mich., a new suburb of Muskegon, where in the same year the Morton Mfg. Company was incorporated, with himself as president; H. E. Morton, vice-president, and Wm. Rowan, Jr., secretary and treasurer, who have since been officially associated with the business. Here he designed the draw cut shaper, for general machine shop work, railroad work, steel foundries, &c. Starting with a machine of 26 in. stroke as the first product in this line, it has developed into the manufacture of the largest traveling head shaper or planer in the world, having a cutting stroke of 7 ft., a vertical feed on the column of 10 ft., and a horizontal feed on bed of 12 ft., standing 22 ft. high and weighing 35 tons.

Mr. Morton was always original in his ideas, never looking at the catalogues of others to see what he would make. He took out over 40 patents, which have nearly all been for useful machines and appliances. In many instances, after the machines were produced, he went to the shops where they were being installed and remained with them, giving instructions in their operation and assuring himself that they were satisfactory and doing the work for which they were built.

The last years of his life were devoted to the perfection of a most efficient draw-cut shaper for slotting railroad axle boxes, planing axle box brasses, shoes and wedges, rod brasses and a great variety of other work. He leaves a widow, two sons and a daughter.

GEORGE P. NEELY, Pittsburgh, died in Chicago March 25. He was en route from Los Angeles, Cal., to his home. He had been connected for 15 years with the Allegheny, Pa., firm of Lindsay & McCutcheon, which became a part of the American Steel Hoop Company. More recently he had been assistant superintendent of the Sharon Steel Hoop Company, Sharon, Pa.

MARK T. COX, one of the directors of the Allis-Chalmers Company, died recently at his home in East Orange, N. J. He was also a director of the New Jersey Zinc Company.

DR. WILLIAM HENRY WAHL, widely known among scientists through his long connection with the Franklin Institute, Philadelphia, as secretary, died at his home in that city March 23 from softening of the brain, due to over work. He was born in Philadelphia December 14, 1848, and received his elementary education in the public schools, afterward entering Dickinson College, where he graduated in 1867. Matriculating at the University of Heidelberg, Germany, he took special courses in geology, chemistry and mineralogy, and was awarded the degree of Doctor of Philosophy in 1869. On his return to Philadelphia he was made resident secretary of the Franklin Institute and occupied that position until 1874. He was again elected in 1882, and served until 1908. By a special action of the institute he was made honorary secretary February 17, 1908. He taught science at the Episcopal Academy from 1871 to 1873, and occupied the chairs of physics and physical geography at the Central High School from 1873 to 1874. He was associate editor of the *Engineering and Mining Journal*, of New York, from 1878 to 1880; editor of the *Manufacturer and Builder* from 1880 to 1895, and of the *Franklin Institute Journal* while he held the post of secretary. He was also the author of several technical works and of a historical sketch of the Franklin Institute. He leaves a widow.

The Eich Union le Gallais, Metz & Co., of Eich, Luxemburg, a long established firm of pig iron makers, have decided to build a Roehling-Rodenhauser electric steel plant at Dommeldingen.

PERSONAL.

Charles Peters, who has been superintendent of the blast furnace of the Ironton Iron Company, Ironton, Ohio, since it was first started, has resigned, selling his interest in the company to President H. A. Marting. W. W. Marting, secretary and treasurer of the company, has taken charge of the furnace temporarily. Mr. Peters was formerly superintendent of the Union Furnace of the Union Iron & Steel Company, also at Ironton.

Chas. E. Carter, until recently superintendent of the Madison, Wis., plant of the American Gas & Electric Company, has been appointed electrical engineer and superintendent of distribution of the Northern Colorado Power Company, with headquarters in Denver.

Prof. R. H. Ferhall, of the Case School of Applied Science, delivered a lecture on "Producer Gas" before the Milwaukee Engineers' Society March 25.

F. P. Woy, formerly with J. G. White & Co., New York, has opened an office at Madison, Wis., as consulting engineer, having resigned the direction of the Twin State Gas & Electric Company's plant at Brattleboro, N. Y.

Cecil B. Smith, Toronto, has been retained as consulting engineer by the Calgary Power & Transmission Company, Alberta, Canada, in connection with the hydro-electric development at Horseshoe Falls, which presents some features of exceptional engineering interest.

Hugo Vits has been appointed purchasing agent for the newly formed Aluminum Goods Mfg. Company, New York.

Samuel Mather has been elected a vice-president of the Cleveland Trust Company, Cleveland, Ohio.

At the meeting of the Milwaukee, Wis., section of the American Chemical Society, March 25, Caleb Davies, Jr., gave a talk on "The Manufacture and Properties of By-Product Coke."

Maximilian Toch will read his second paper on the "Protection of Steel Against Corrosion" before the American Electrochemical Society, on Friday evening, April 3, at the Chemists' Club, New York.

John O. Williams of Vought & Williams, 363 Greenwich street, New York, has been elected a director of the Fidelity Trust Company.

Milton E. Coombs of Warren, Ohio, has sold his stock in and resigned as manager of the New Castle Forge Company, New Castle, Pa. He was at one time superintendent of the steel hoop department of the Carnegie Steel Company in the Youngstown District.

James R. Anderson of the Lunkenheimer Company, Cincinnati, has returned from a nine months' trade missionary trip in South America. He went across the Isthmus of Panama, inspecting the canal work, and then down the Pacific side visiting cities in Ecuador, Peru and Chili, coming back on the Atlantic side through Argentina, Uruguay and Brazil. He says that United States manufacturers are handicapped in South America because they do not pack their goods strongly enough, and also because of inadequate shipping facilities.

Sir Robert A. Hadfield, Sheffield, England, is expected to visit the United States in the next few weeks.

William M. Pratt, treasurer and general manager of the Goodell-Pratt Company, toolsmiths, Greenfield, Mass., sailed March 31 for a two months' business trip to Europe.

Harrison Souder, general superintendent of the Cornwall Ore Bank Company, operating the magnetic iron ore mines at Cornwall, Pa., has just returned from a tour of inspection of the iron ore mines of the Spanish-American Iron Company, at Mayari and Daiquiri, Santiago, Cuba.

G. G. Crawford, president of the Tennessee Coal, Iron & Railroad Company, and C. A. Stillman, representative in Birmingham of Rogers, Brown & Co., have just returned from a trip in Europe.

The contract for the steel work for the new blast furnace to be erected in Cleveland, Ohio, by Corrigan,

McKinney & Co., has been let to the Variety Iron & Steel Works Company, Cleveland. The contracts for the buildings, engines, generators and other machinery have not been awarded.

The Senate Committee at Work on Its Tariff Bill.

WASHINGTON, D. C., March 30, 1909.—The Senate Finance Committee yesterday examined a number of prominent iron and steel manufacturers, several members of the Board of General Appraisers and the examiners at the port of New York having supervision of imported merchandise classified under the metal schedule. The witnesses all appeared before the committee by invitation and confined their testimony to answering questions propounded by Chairman Aldrich and other members of the committee. Those present included E. H. Gary, chairman United States Steel Corporation; E. C. Felton, president Pennsylvania Steel Company; Powell Stackhouse, president Cambria Steel Company; F. W. Wood, president Maryland Steel Company; Wallace H. Rowe, president Pittsburgh Steel Company; John C. Oliver, president Oliver Iron & Steel Company, and Willis L. King, vice-president Jones & Laughlin Steel Company. At Senator Aldrich's suggestion Judge Gary acted as the principal witness, but from time to time the other manufacturers supplemented his answers and Mr. King replied to a number of questions based upon his testimony given before the Ways and Means Committee.

The chief object of the Finance Committee in summoning these manufacturers was to obtain their expert opinions concerning the differential or "spread" provided by the Payne tariff bill in the duties on raw materials and partly or wholly manufactured products. While the members of the Finance Committee decline to make any statement regarding the evidence given by the delegation, all of whom were enjoined not to discuss their testimony outside the committee room, it may be stated that Judge Gary pointed out many inequalities in the relation between raw materials and finished products in the metal schedule as framed by the Ways and Means Committee. He did not, as has been reported in the daily press, recommend reductions in rates, but he did state that if the rates on certain finished products were retained the duties on the material from which they are made should be reduced to preserve the proper equilibrium.

The Finance Committee has not yet completed the revision of the metal schedule and will not take final votes on any items therein until next week. The general tendency of the amendments thus far suggested has been upward and in some cases the Dingley rates have been tentatively restored.

W. L. C.

Long Screws Mathematically Accurate.

The manufacture of screws varying within narrow limits of error is perhaps one of the most difficult problems encountered in mechanical lines. Their accuracy or inaccuracy affects the performance of almost every kind of machine or instrument of precision, and also changes the values of both machines and their products. The production of perfect screw work has been practically unattainable commercially, because the cost of manufacturing such work has increased in a very high ratio as the limits of error have decreased. For the production of screws within narrow limits of error caused by lost motion, the engine lathe or its imitation has been used, and the methods employed do not come any nearer to the elimination of possible error or exact duplication of lead than the products of a quarter of a century ago.

Up to this time there has been no method of producing screws of unlimited lengths, regardless of the size in diameter, either large or small, except to cut short lengths and join them together, which necessarily makes very weak and rather unsatisfactory screws. Believing the time ripe for improvement in this line of manufacture, the Screw Cutting Company of America, manufacturer of power, lead and feed screws, 150 Berkeley street,

Wayne Junction, Philadelphia, Pa., has designed, patented and built a number of screw machines, especially designed to overcome these objectionable features, and now proposes to furnish a longer and better screw at a lower cost to the consumer than can be produced by any other method. A number of these machines will be installed in the company's new plant, now being built at Seventeenth street and Sedgeley avenue, where power, lead and feed screws of any length, diameter, pitch or style of thread, mathematically accurate, will be made.

Labor Notes.

Action taken by the tri-district convention of the United Mine Workers, at Scranton, Pa., March 24, swept away the probability of a coal strike, for it was decided by a resolution adopted and then referred to a special committee that if the committee should fail in efforts to obtain concessions from the coal operators, President Taft should be appealed to and requested to appoint a commission to arbitrate the demands. The convention decided to approve a report by a committee on policy that had been appointed in the morning, and in so doing decided there would be no suspension April 1 or pending a settlement of the demands, but reaffirmed all demands which were made by the convention last October. The next conference between the operators and the committee of the mine workers will take place next week at Philadelphia. It has been stated that the operators will refuse to permit the men to work without an agreement. The stocks of anthracite now ready for market are approximately 13,000,000 tons, which will supply the normal demand for April, May, June and a portion of July.

The Wharton Steel Company, Wharton, N. J., has announced a 10 per cent. reduction in the pay of the blast furnace employees and miners, to go into effect April 1. The company operates all the properties which were owned by the late Joseph Wharton of Philadelphia. The cut will apply to between 500 and 600 men, day laborers, who get from \$1.25 to \$1.30 a day, being exempted.

The Bethlehem Steel Company, South Bethlehem, Pa., has ordered a 10 per cent. cut in the wages of furnacemen to go into effect April 1. Other companies in the Lehigh Valley manufacturing pig iron are expected to reduce wages to the same extent on the same date. Wages will then be back to the level of 1905.

The Lucknow Iron & Steel Company has reduced wages about 15 per cent. at its mills at Glendale, Berks County, Pa.

At a meeting in Reading, Pa., March 27, the Executive Board of the Eastern Division of the Amalgamated Iron, Steel and Tin Workers' Association decided not to accept the reduction in wages made by the iron rolling mills in the division. Some of the employees of the Reading Iron Company held a separate session, ratifying the action of the board. The reduction in puddling is from \$4.50 to \$3.75. On Monday, March 29, when the reduction became effective, many employees of the company went to work as usual. At the pipe mill all remained at work. At the sheet mill and two other mills all departments were running Monday except the puddling department. The Danville, Pa., plant is closed. Two hundred puddlers held a meeting and appointed a committee to conduct the strike.

The Buck's Stove & Range Company, St. Louis, has made a motion to appeal to the United States Supreme Court the decision recently made by the District Court of Appeals at Washington modifying the original injunction restraining the American Federation of Labor officers from publishing the name of the company in the "We Don't Patronize" list. The modification permitted the defendants to refer in the columns of the *American Federationist* to the St. Louis company, while still restraining the publication of its name in the list. The contention of the company is that unfavorable reference to it apart from the boycott list are equally a part of the conspiracy to injure its business.

The *Review* of the National Founders' Association for March gives a summary of the strikes of iron molders in the United States and Canada from 1904 to 1908, inclu-

sive. The year 1908 was one of few new strikes, there being 30 in 29 cities, involving 1082 molders. The article says that the small number "was due somewhat to the depression in business, but especially to the rapidly diminishing number of foundries in Canada and the United States wherein the union is possessed of sufficient strength to cause a strike." The number of strikes in the five years is put at 149 in 123 cities. The number of iron molders involved was 12,268 and the cost in strike benefits and loss of wages is estimated at \$5,770,640. In the 149 strikes tabulated the union was successful in five. Three cases were compromised. The above eight strikes involved 1560 molders. In the remaining 141 strikes involving 10,708 molders the employers are reported to have been successful.

Notices of a wage cut, effective April 1, were posted March 26 in the various plants of the Republic Iron & Steel Company, at Youngstown, Ohio, and in that vicinity. The men were directed to apply to heads of departments for details of the cut, which these officers say will be 10 per cent. For example, blast furnace workers who have received \$1.60 will be paid \$1.45 a day. Only members of the Amalgamated Association of Iron, Steel and Tin Workers escape, because of their scale agreement. The cut indicates that the company will demand a lower scale in the yearly settlement July 1.

The National Metal Trades Association.—A provisional programme has been made for the eleventh annual convention of the National Metal Trades Association in New York, April 14 and 15. Papers will be presented as follows: "The Premium System of Paying for Labor," by William Lodge, Lodge & Shipley Machine Tool Company, Cincinnati; "Importance of Apprenticeship Systems," by E. P. Bullard, Jr., Bullard Machine Tool Company, Bridgeport, Conn.; "The Rights of Labor from a Workingman's Viewpoint," by James Wilson, president of the Patternmakers' League of North America. Judge Epaphroditus Peck, Hartford, Conn., will speak on "Probable Changes in the Law of Employers' Liability." David Gibson, editor of *Common Sense*, Cleveland, Ohio, is also expected to speak. There will be discussions on profit-sharing systems and on provisions for employees grown old in service.

The visit of the Engineers' Society of Western Pennsylvania to the plant of the Mesta Machine Company, at West Homestead, Pa., on March 27, was an event of more than ordinary interest. While the Engineers' Society was the largest body represented, the party included many members of such organizations as the Pittsburgh Foundrymen's Association, the Manufacturers' Association and the Technischer Verein von Pittsburgh, besides local representatives of the Geological Survey, chemical and inspecting engineers and manufacturers of rolling mill equipment, iron and steel, alloys, &c. It was the most representative gathering of engineers and men engaged in industrial pursuits recently assembled in Pittsburgh. A group photograph was taken on arrival at the plant, after which the various departments were visited under the guidance of members of the Mesta organization, which included George Mesta, C. J. Mesta, F. E. Mesta, W. D. Rowan, J. A. Horning and others.

The Queensboro Bridge, between New York City and Long Island City, which is one of the greatest cantilever structures in the world, was thrown open to traffic March 30. No transportation lines have been built across it, but franchises have been applied for by several companies.

Only cans made of plate with 2½ lb. of tin coating per base box will be used this season by the members of the Wisconsin Pea Packers' Association, according to a resolution just signed at Sheboygan, Wis. This is an increase of one-fourth in the weight of the tin coating.

The Embree Iron Company, operating a blast furnace at Embreeville, Tenn., went into the hands of a receiver March 18.

NEWS OF THE WORKS.

Iron and Steel.

The blast furnace of the Zenith Furnace Company, Duluth, Minn., is being extensively repaired, preparatory to blowing in when market conditions are more favorable.

The rail mill of the Cambria Steel Company, Johnstown, Pa., which has been idle for a short time, was started up this week, and the rolling will be on an order for 2500 tons of open hearth rails, the first considerable open hearth rail contract to be put through the rail mill at Johnstown.

General Machinery.

The Chicago House Wrecking Company, Chicago, Ill., has purchased the plant and equipment of the American Foundry & Machine Company, Chicago Heights, which it is offering for sale.

The old firm of W. J. Savage & Co., Knoxville, Tenn., has been incorporated under the name of the W. J. Savage Company, with W. J. Savage as president, R. P. Gettys vice-president, and C. M. Funck secretary and treasurer. The company, whose plant is advantageously located, having 366 ft. of frontage on the Southern Railroad, has let contract for the erection of an addition, 80 x 125 ft., two stories, which will be equipped with the tools in the present machine shop. The company manufactures mill machinery and elevating, conveying and transmission machinery.

The Crocker-Wheeler Company, Ampere, N. J., has sold 14 three-phase 60-cycle squirrel cage induction motors, aggregating 220 hp., to Johnson & Johnson, New Brunswick, N. J.; 160 induction motor, Buffalo Copper & Brass Company, Buffalo, N. Y.; 20-hp. motor, Frick Company, Waynesboro, Pa.; 250-kw. engine type generator, Eastwood Mfg. Company, Belleville, N. J.; 20 motors, Lanston Monotype Machine Company, Philadelphia, Pa.; six motors, F. P. Little Electric Company, Buffalo, N. Y., and 244 hp. of direct current motors of the rolling mill type for a large rolling mill near Pittsburgh.

The Connersville Blower Company, Connersville, Ind., has increased its capital stock from \$200,000 to \$400,000.

Byrne & Du Bois, machinists, 12 Plain street, Albany, N. Y., have purchased a site at 130 Hudson avenue, and will soon start construction on a one-story shop, 35 x 80 ft. The firm will utilize the building for general machine and repair work.

Foundries.

Contracts have been let to the Missouri Bridge & Iron Company, St. Louis, for the erection of two new structures for the Commonwealth Steel Company, St. Louis, Mo., at its Granite City (Ill.) Works. The proposed buildings will consist of a finishing building, 75 x 125 ft., with roof and sides of corrugated iron and a core and sand storage room building, 62 x 112 ft., with brick sides and corrugated roof. The new equipment arranged for consists of one 7½-ton traveling crane, which will be built by the company; a 4-ft. heavy duty planer and a 10-ft. heavy duty planer, the latter being furnished by Manning, Maxwell & Moore. It is believed that this is the only steel foundry in the Mississippi Valley having two 10-ft. planers in service.

The Ruston Hardware & Supply Company, Ruston, La., will have plans ready within the next 10 days for a new gray iron foundry for making castings and a department for the manufacture of car wheels.

The Central Foundry Company has definitely decided to rebuild its pipe foundry at Anniston, Ala., which was recently destroyed by fire, and construction work on the new plant has already been started. The Southern Railroad has agreed to change the water course of the creek which divides the Central Foundry Company's property and the right of way of the Southern Railroad, and this change will enable the company in rebuilding its plant to increase the width of the buildings. The Louisville & Nashville Railroad has agreed to make some changes in its tracks which will relieve the congestion in the yard of the foundry company. It was erroneously reported that the company would transfer the equipment of the burned plant from Anniston to Holt, Ala., where it is building a pipe foundry near its blast furnace.

Power Plant Equipment.

A new electric light and water plant is being installed at Steward, Ill., by E. T. Beitle under a 20-year franchise. The contract for the equipment has been placed with Fairbanks, Morse & Co., Chicago, Ill.

The city of Platte, S. D., has awarded a contract to the Chicago Bridge & Iron Works for constructing a new pumping system.

The Minneapolis Steel & Machinery Company, Minneapolis, Minn., has sold the Dakota Gas, Electric Light & Power Company, Wagner, S. D., a second Muenzel gas engine and suction producer.

The city of Meridian, Miss., will, it is stated, issue bonds in the sum of \$250,000 within the next 60 days to complete the purchase of the water works system. Investigations are being made as to the feasibility of installing an electric light plant

that will also provide power for the operation of the water works.

The Turley Ditch Company, Aztec, N. M., has been incorporated with a capital stock of \$600,000 for the purpose of developing an irrigation project, the realization of which will require the construction of an extensive power plant on the San Juan River near the Colorado line.

The Rossville Light & Heat Company, Rossville, Ind., recently incorporated with a capital stock of \$6000, is arranging to construct a light and heat plant. The officers are James E. Silverthorn, president, and Jas. R. Crouse, secretary.

The Wilkes-Barre City School District, Wilkes-Barre, Pa., will receive bids until April 26 for boilers, breeching and stack and other power plant equipment, heating and ventilating system and electrical work for the high school. Plans and specifications may be obtained after April 5 from Runyon & Carey, 122 Market street, Newark, N. J., or at the office of Owen McGlynn, Simon Long Building, Wilkes-Barre.

The Huntington-Bargar Machine Company, Jamestown, N. Y., recently incorporated, has purchased the Alfred Huntington plant at Celoron, N. Y., which it will use for the manufacture of gas and gasoline engines.

Morris Kantrowitz, general contractor, Albany, N. Y., has been awarded contract for the building to be erected at the Central Islip State Hospital, Central Islip, N. Y., at \$103,700. The contract includes two horizontal tubular boilers, engine, generator and switchboard, which the contractor will buy.

H. B. Graves, 74 State street, Rochester, N. Y., is considering installation of and is ready for preliminary estimates on 75-hp. gas producer plant and two gas engine driven generators for lighting and elevator use.

Bridges and Buildings.

Steel viaducts of 1297 ft. and 200 ft. in length are to be built at Omaha. Plans for the latter were recently prepared by the city engineer.

Love Brothers, Inc., Aurora, Ill., manufacturers of architectural and structural steel work, are extending their plant by the construction of a new \$10,000 building.

Architect W. L. Stoddart, New York, has completed plans for a courthouse building to be erected at Schenectady, N. Y. The building is to be four stories, of steel frame construction and about 500 tons of steel will be required. Bids will be received by the Board of Supervisors at Schenectady until April 26.

Plans have been completed by Architects Green & Wicks, 110 Franklin street, Buffalo, N. Y., and bids will be received by State Fair Commissioner, Syracuse, N. Y., on April 10, for the construction of the following brick and steel buildings, to be erected at the State Fair Grounds, Syracuse: Grange building, administration building, dairy building, press building and forge and blacksmith shop building. The appropriation covering the above work is \$278,000.

Fires.

The plant of the Rands Mfg. Company, Detroit, Mich., maker of automobile equipment, was recently damaged by fire.

The plant of the Buffalo Weaving & Belting Company, Buffalo, N. Y., was damaged \$10,000 by fire March 23.

The foundry building of the Pennsylvania Foundry Company, York, Pa., was damaged \$5000 by fire March 23.

The plant of the Carr Leather Company, Salem, Mass., was burned March 27, the loss being estimated at \$100,000.

Hardware.

The Iron City Sanitary Mfg. Company, Pittsburgh, manufacturer of porcelain enameled ironware, states that the recent fire at its Zellenople, Pa., plant was confined to the roofs of several of its enameling rooms, causing a loss of about \$3000. Operations were suspended in part of the plant for two days, while a temporary roof was being erected, but things are again going on as usual and the company is able to take care of its customers' requirements.

A company has been organized at Deerfield, Wis., to manufacture a newly patented harrow, designed by Henry Nestetu, Liberty Prairie, Wis., and a factory will either be built or leased.

The Racine Refrigerator & Ice Machine Company, Racine, Wis., whose plant has been destroyed by fire, has secured new quarters and will continue in business at Kenosha, Wis., occupying works vacated some time ago by the Visible Typewriter Company. Some new machinery will be purchased after the company is settled.

The F. & N. Mfg. Company, Richmond, Ind., maker of lawn mowers, which suffered a loss of \$50,000 by fire, March 21, will rebuild, and probably on a much larger scale than formerly. The loss was fully covered by insurance. A warehouse containing 10,000 lawn mowers was saved.

Miscellaneous.

The Hutchins Car Roofing Company, New York, has its Hyde Park, Pa., plant turning out 1200 Hutchins metal car roofs for several railroads.

The Pittsburgh Gage & Supply Company, Pittsburgh, has

recently completed a contract for the Pittsburgh Steel Company, Monessen, Pa., for high pressure steam piping, including valves and fittings from 14 to 20-in. inclusive, and has just received an order from the same company for a White Star continuous oil filter, having a capacity of 3000 gal. per day. Other recent contracts taken include a Smith-Valle pot valve boiler feed pump for 2000 hp. boiler capacity, to be installed in the plant of the Federal Coal & Coke Company, Federal, W. Va., and the same make of pump for boiler feed for the Weyanoke Coal & Coke Company, Weyanoke, W. Va., and the steam and exhaust lines from 18 in. down for the municipal plant at Rocky Mount, N. C.

The Detroit Radiator Company, Detroit, Mich., which is occupying temporary quarters, expects to build a new plant, the location for which has not yet been selected. While plans for the new plant have not yet been prepared, it will have about 12,000 sq. ft. of floor space and will be built in or near Detroit.

F. E. Kaminsky, Watertown, Wis., has secured a contract from the city of Moline, Ill., for 11,240 ft. of iron piping, valves, hydrants, &c.

The Mitchell Motor Car Company, Racine, Wis., has begun improvements which when finished will practically double the present plant. The structure now being erected is for office purposes and will be 100 x 120 ft. It will cost about \$120,000. There are also being added three new plant buildings which will comprise a floor space of about 163,000 sq. ft. All of the above except the office building are to be of concrete fireproof construction and one story high.

The Hughson Steam Specialty Company, Inc., Chicago, Ill., is successor to the business of the John Davis Company in the manufacture of Eclipse steam specialties. Geo. F. Hughson, who is at the head of the company, was formerly vice-president and secretary of the John Davis Company, and in connection with Mr. Hochfeldt owned and designed all of the specialties manufactured by that company. The new concern has the patents and owns all of the tools and machines formerly used in the manufacture of this line. For the present the company is occupying the plant of the John Davis Company, but expects to move about May 1 to a building being erected for its use at 5021-23 South State street.

The Montrose Metal Casket Company, Philadelphia, Pa., has purchased the old works of the Pope Mfg. Company, at Hagerstown, Md., which it is altering extensively with the intention of making it one of the most modern plants in the country for the manufacture of metal caskets. After a thorough investigation as to the best method for heating steel for its special purpose, it decided to install the Kirkwood system of fuel oil burning, which is manufactured by Tate, Jones & Co., Inc., Pittsburgh, Pa. All the furnaces have been especially designed and built by Tate, Jones & Co., at their Letsdale, Pa., plant, and the burner, the most important part of the furnace, is of the regular Kirkwood type, having a fixed ratio for the air and oil mixture, which is adjusted at their factory before shipment, and which cannot be altered by any other than the maker. As a result, it is claimed, a perfect mixture is always assured.

The Auto Car Equipment Company, Buffalo, N. Y., has commenced work on its new plant at Elmwood and Hertel avenues and the Erie Railroad. It will be 180 x 240 ft., two stories.

The Development & Funding Company, Niagara Falls, N. Y., is making extensive additions to its plant on Buffalo avenue, consisting of two four-story buildings, 95 x 110 and 48 x 110 ft., respectively, of reinforced concrete, and six other smaller buildings, including storage buildings for oil and lime, blacksmith and carpenter shops, power plant and transformer station. Niagara power will be used.

The Monarch Engineering Company, recently incorporated at Buffalo, N. Y., with a capital stock of \$25,000, to do a general engineering and contracting business, has secured contract for the construction of the new Wheeler elevator, on the Buffalo River, at Ganson street.

J. A. Coleman of Bedford, Ind., has the contract for building a large stone mill there for the Ingle Stone Company. The Bedford Foundry & Machine Company will furnish the boilers, engines and machinery and the Stone City Steel Construction Company the iron work.

Among Indiana stone plants that are now using an endless wire instead of the regular saws to cut stone, are those of the Eclipse Stone Company, Ellettsville, and John A. Rowe, Bedford. It is said the wire cuts three times as fast as blade saws.

Charles Caldwell and Charles Rhorer have leased the plant of the National Machine Company at Columbus, Ind., and will put in equipment to manufacture rotary engines and patent window sash. A foundry will be built as an addition to the plant.

The Indiana and Illinois Deep Waterways' Association has been organized, for the purpose of constructing a drainage canal through the Kankakee marshes, from South Bend, Ind., to Moline, Ill. Dixon W. Place, South Bend, is president.

The Keyes Sweeper Company, maker of street sweepers, Muncie, Ind., has been incorporated, with \$20,000 capital stock. The directors are John E. Ellis, Erasmus L. Keyes, John O. Potter, William F. White and Earl L. Clevenger.

Although but recently having completed a new factory building, the Warner Gear Company, Muncie, Ind., has found it necessary to build another. The company manufactures automobile parts and employs about 300 men.

The M. Rumley Company, Laporte, Ind., manufacturer of threshing machines, steam traction engines and hullers, will build an additional plant in which to manufacture gasoline traction engines for plowing. This will increase the working force from 500 to 750.

J. C. F. Sprankle is at the head of the newly organized American Steel Dredge Company, Ft. Wayne, Ind., which has \$150,000 capital stock and which will build a plant to employ 100 men.

The Buffalo Copper & Brass Rolling Mill is building an addition to its plant on Military road and the New York Central Railroad, Buffalo, N. Y., which will be 144 x 178 ft., one story, of brick and steel, with truss roof. Considerable new equipment in the way of brass rolling machinery, electric motors, &c., will be added. Niagara Falls power will be used.

The Galvin Regulating Radiator Company has been incorporated at Buffalo, N. Y., with a capital of \$100,000, by Frank P. Galvin, Harry C. Galvin and W. B. Grandison.

Samuel B. Williams, W. C. Smith and S. W. Leutweller of Rochester, N. Y., are organizing a company to manufacture a nonpulsating automobile fire pumping engine, to be operated by the same gasoline motor as used in operating the vehicle. Negotiations are under way and have been reported as completed for the purchase of the foundry and machine shop at Ames street and the New York Central Railroad tracks belonging to the American Laundry Machine Company, Mr. Leutweller is also heavily interested in the Leutweller Pumping Engine Company of Los Angeles, Cal.

The Geneva Transmission Company, Geneva, N. Y., has been organized by Peter W. Kane, the patentee, and Bernard Borgman, president and treasurer of the Vance Boiler Works, to manufacture a starting device for automobiles, which does away with the necessity of cranking to start the engine; also changeable gears and special type of gasoline engine for automobile use. Work will be taken up at once on the first mentioned article and a portion of the Vance Boiler Works plant will be utilized. The manufacture of gasoline engines and gears will not be taken up until about July 1.

Rope Making in Japan.

A Japanese engineer furnishes the following information relative to the rope making industry in his country:

Before the year 1887 this industry was in a very poor condition. The factory attached to the Yokosuka Naval Dock Yard was the only establishment of its kind in Japan conducted after anything like those of Western countries. The value of imports of foreign made rope at that time amounted to great figures. To overcome this excessive outgo of money the Tokio Rope Mfg. Company was organized in April, 1887, and started to make rope with the help of English experts. After acquiring the necessary experience the company became able to produce rope and netting of such quality as to compete with the imported article. It now has two branch hemp rope works, in addition to its main plant—one at Hyogo, established in 1895, and the second at Hommuro-cho, Azabu. The latter plant was formerly that of the Tsukishima Rope Mfg. Company, which was purchased in 1908. Owing to the steady increase of mining and other industrial lines there arose a large demand in Japan for wire rope, so that after the close of the Japan-China War (1896) the Tokio Rope Mfg. Company started a plant for its manufacture at Dai-ku-cho, Fukugawa. This was the pioneer wire rope plant of the Orient. Though the company encountered many difficulties at the start, its product has now a wide demand in naval, mercantile marine and other industrial circles; in fact, the quality of the output is claimed to be superior to the foreign made article that is exported to the Orient. The products of the Japanese manufactories are now largely exported to Shanghai, Singapore, Penang, Vladivostok and also to South America. In view of the growing demand for its line of wire rope as well as hemp, not only in Japan but also abroad, the company will start a new plant at Kokura, Kyushu. This company now possesses a capital of 1,000,000 yen (\$500,000), of which over 800,000 yen (\$400,000) is paid up. The dividend to shareholders for the last half year was declared at 20 per cent. per annum.

The Iron and Metal Trades

One of the features is the uncertainty as to prices in some branches of the finished trade, brought about to some extent by the publication of rumors from irresponsible sources. They make buyers suspicious, and encourage them to expect figures which attendant conditions make impossible. It is particularly the desire to contract for long delivery, far into next year, which is objected to by the mills. The latter in many instances are willing to book business at present prices for delivery during the present calendar year, but are chary about going beyond that period.

Reports have been current of low prices on steel bars, but the lowest which has been done, under conditions particularly attractive to the seller, has been 1.10c. Pittsburgh.

The wire trade is beginning to feel the approach of the close of the spring trade, so far as the mills are concerned. Shipments from storehouse and mill continue heavy, but production is beginning to decline. The leading interest which was operating a few weeks since at the rate of 85 per cent. capacity is now down to 75 per cent., and a further gradual restriction is expected as we approach the month of May.

On the other hand, the tin plate mills have been pressed into service until now about 90 per cent. of the capacity is working. The works are taking care of the season requirements of the canners, and will probably try also to accumulate a stock in anticipation of summer developments.

The movement in structural steel continues heavy, and it is in this branch that low prices are undoubtedly tempting undertakings long dormant into life. It is estimated that bids were put in during March on 200,000 tons of material; in fact, the American Bridge Company bid on 70,000 tons in one day. It is estimated that in March a total of 125,000 tons was booked by all the interests. During the past week the shops took in 5000 tons for the Louisville & Nashville, 3000 tons for the Carolina, Clinchfield & Gulf, 1300 tons for the Corrigan, McKinney blast furnace at Cleveland, 1100 tons for the Johns-Manville building at Milwaukee, 2000 tons for pier 53 and 2000 tons for the Best Building in this city. Bids have been asked for 6300 tons for the Dennison-Harvard bridge at Cleveland.

The largest order of rails was 22,000 tons of girder rails for the Chicago Railways Company, which are to be rolled at Lorain. The Gary works received a total of 17,600 tons, including 12,000 tons for a leading Northern system. Ensley, which was running out of work, took 8400 tons from the Chattanooga, St. Louis & Birmingham. There were also placed 3000 tons for the Norfolk & Western, 2500 tons for the Wabash, 3000 tons for the Texas Pacific, and 2500 tons for the Copper River & Northwestern in Alaska.

Apparently to cover the material for the San Francisco pipe contract, the leading cast iron pipe interest has purchased between 40,000 and 50,000 tons of Southern Pig Iron for extended delivery, at a price reported to have been around \$11 for No. 2 Foundry. Rumors of sales down to \$10.50 cannot be traced to any authoritative source and should be received with reserve.

Some low prices have been made lately on cast iron pipe, a contract for about 1000 tons for Reading, Pa., having been taken at \$21.90 per net ton, delivered. The Cheyenne order for 20,000 tons has been cut in two. Rome, N. Y., is in the market for 4000 tons, and there is looming up the possibility of requirements for an extension of the New York high pressure system, which would call for about 30,000 tons.

Copper has gained a little in strength, there having been further sales to domestic consumers. The market is now at 12½c. cash for electrolytic.

Lead is up to 4.10c., New York, and spelter is a shade higher.

There has been a good deal of activity in tin, and the price of the metal is now the highest of the year.

A Comparison of Prices.

Advances Over the Previous Month in Heavy Type,
Declines in Italics.

At date, one week, one month and one year previous.

| | Mar. 31, 1909. | Mar. 24, 1909. | Mar. 3, 1909. | Apr. 1, 1908. |
|--|----------------|----------------|---------------|---------------|
| PIG IRON, Per Gross Ton: | | | | |
| Foundry No. 2 standard, Philadelphia | \$16.25 | \$16.25 | \$16.50 | \$17.75 |
| Foundry No. 2, Southern, Cincinnati | 14.25 | 14.75 | 15.75 | 15.25 |
| Foundry No. 2 local, Chicago .. | 16.50 | 16.50 | 16.50 | 17.85* |
| Basic, delivered Eastern Pa. | 15.00 | 15.50 | 16.00 | 17.25 |
| Basic, Valley furnace | 14.50 | 14.75 | 15.00 | 15.25 |
| Bessemer, Pittsburgh | 15.90 | 16.15 | 16.40 | 17.75 |
| Gray forge, Pittsburgh | 14.40 | 14.40 | 14.90 | 15.65 |
| Lake Superior charcoal, Chicago | 19.50 | 19.50 | 19.50 | 20.50 |

| | | | | |
|---|-------|-------|-------|-------|
| BILLETS, &c., Per Gross Ton: | | | | |
| Steel billets, Pittsburgh | 23.00 | 23.00 | | 28.00 |
| Forging billets, Pittsburgh | 25.00 | 25.00 | | 30.00 |
| Open hearth billets, Phila. | 25.40 | 25.40 | | 29.20 |
| Wire rods, Pittsburgh | 33.00 | 33.00 | 33.00 | 35.00 |
| Steel rails, heavy, at mill | 28.00 | 28.00 | 28.00 | 28.00 |

| | | | | |
|-------------------------------------|-------|-------|-------|-------|
| OLD MATERIAL, Per Gross Ton: | | | | |
| Steel rails, melting, Chicago | 13.00 | 13.00 | 13.00 | 12.00 |
| Steel rails, melting, Phila. | 13.25 | 13.50 | | 12.75 |
| Iron rails, Chicago | 16.00 | 16.00 | 17.75 | 15.00 |
| Iron rails, Philadelphia | 17.00 | 17.00 | | 17.00 |
| Car wheels, Chicago | 14.50 | 14.50 | 14.75 | 14.50 |
| Car wheels, Philadelphia | 14.00 | 14.00 | | 14.00 |
| Heavy steel scrap, Pittsburgh .. | 13.75 | 14.00 | 14.50 | 13.00 |
| Heavy steel scrap, Chicago | 12.00 | 12.00 | 12.50 | 11.25 |
| Heavy steel scrap, Philadelphia. | 13.25 | 13.50 | | 12.75 |

| | | | | |
|-------------------------------------|--------|--------|--------|--------|
| FINISHED IRON AND STEEL, | | | | |
| Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Refined iron bars, Philadelphia .. | 1.37 | 1.37 | 1.42 | 1.65 |
| Common iron bars, Chicago | 1.27½ | 1.32½ | 1.40 | 1.65 |
| Common iron bars, Pittsburgh .. | 1.35 | 1.35 | 1.40 | 1.50 |
| Steel bars, tidewater, New York .. | 1.36 | 1.36 | 1.36 | 1.76 |
| Steel bars, Pittsburgh | 1.20 | 1.20 | 1.20 | 1.60 |
| Tank plates, tidewater, New York .. | 1.46 | 1.46 | 1.46 | 1.86 |
| Tank plates, Pittsburgh | 1.30 | 1.30 | 1.30 | 1.70 |
| Beams, tidewater, New York | 1.46 | 1.46 | 1.46 | 1.86 |
| Beams, Pittsburgh | 1.30 | 1.30 | 1.30 | 1.70 |
| Angles, tidewater, New York | 1.46 | 1.46 | 1.46 | 1.86 |
| Angles, Pittsburgh | 1.30 | 1.30 | 1.30 | 1.70 |
| Skelp, grooved steel, Pittsburgh .. | 1.25 | 1.25 | | 1.70 |
| Skelp, sheared steel, Pittsburgh .. | 1.35 | 1.35 | | 1.80 |

| | | | | |
|--------------------------------------|--------|--------|--------|--------|
| SHEETS, NAILS AND WIRE, | | | | |
| Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Sheets, black, No. 28, Pittsburgh .. | 2.20 | 2.20 | 2.30 | 2.50 |
| Wire nails, Pittsburgh | 1.95 | 1.95 | 1.95 | 2.05 |
| Cut nails, Pittsburgh | 1.80 | 1.80 | 1.80 | 1.90 |
| Barb wire, galv., Pittsburgh | 2.40 | 2.40 | 2.40 | 2.50 |

| | | | | |
|------------------------------------|--------|--------|--------|--------|
| METALS, Per Pound: | | | | |
| Lake copper, New York | 13.00 | 13.00 | 12.75 | 13.25 |
| Electrolytic copper, New York .. | 12.62½ | 12.50 | 12.62½ | 13.00 |
| Spelter, New York | 4.85 | 4.80 | 4.80 | 4.70 |
| Spelter, St. Louis | 4.70 | 4.65 | 4.62½ | 4.55 |
| Lead, New York | 4.10 | 4.05 | 3.95 | 3.97½ |
| Lead, St. Louis | 3.97½ | 3.90 | 3.80 | 3.80 |
| Tin, New York | 29.50 | 28.50 | 28.62½ | 31.25 |
| Antimony, Hallett, New York .. | 7.75 | 7.75 | 7.75 | 8.75 |
| Nickel, New York | 45.00 | 45.00 | 45.00 | 45.00 |
| Tin plate, 100 lb., New York | \$3.64 | \$3.64 | \$3.89 | \$3.89 |

* This quotation has been changed for uniformity from price at furnace to delivered price at foundries, adding 35c. for switching charges.

Prices of Finished Iron and Steel F.O.B. Pittsburgh.

Freight rate from Pittsburgh in carloads, per 100 lb.: New York, 16c.; Philadelphia, 15c.; Boston, 18c.; Buffalo, 11c.; Cleveland, 10c.; Cincinnati, 15c.; Chicago, 18c.; St. Paul, 32c.; St. Louis, 22½c.; New Orleans, 30c.; Birmingham, Ala., 45c. Rates to the Pacific Coast are 80c. on plates, structural steel and sheets, No. 11 and heavier; 85c. on sheets, Nos. 12 to 16; 95c. on sheets, No. 16 and lighter; 65c. on wrought pipe and boiler tubes.

Structural Shapes.—I-beams and channels, 3 to 15 in., inclusive, 1.30c., net; I-beams over 15 in., 1.40c., net; H-beams over 8 in., 1.50c.; angles, 3 to 6 in., inclusive, ¼ in. and up, 1.30c., net; angles, over 6 in., 1.40c., net; angles, 3 x 3 in. and up, less than ¼ in., 1.50c., base, half extras, steel bar card; tees, 3 in. and up, 1.30c., net; tees, 3 in. and up, 1.30c., net; angles, channels and tees, under 3 in., 1.20c., base, half extras, steel bar card; deck beams and bulb angles, 1.60c., net; hand rail tees, 2.70c., net; checkered and corrugated plates, 2.70c., net.

Plates.—Tank plates, ¼ in. thick, 6¼ in. up to 100 in. wide, 1.30c., base. Extras over this price are as follows:

Tank, ship and bridge quality, ¼-in. thick on edges, 100 in. wide, down to but not including 6 in. wide, is taken as base.

Steel plates up to 72 in. wide, inclusive, ordered 10.2 lb. per square foot, shall be considered $\frac{1}{4}$ -in. plate. Steel plates over 72 in. wide must be ordered $\frac{1}{4}$ -in. on edge, or not less than 11 lb. per square foot, to take base price. Steel plates over 72 in. wide ordered less than 11 lb. per square foot down to the weight of 3-16-in. shall take the place of 3-16-in.

Percentages as to overweight on plates, whether ordered to gauge or weight, to be governed by the Association of American Steel Manufacturers' Standard Specifications.

| | |
|--|--------|
| Gauges under $\frac{1}{4}$ -in. to and including 3-16-in. plates on thin edges..... | \$0.10 |
| Gauges under 3-16-in. to and including No. 8..... | .15 |
| Gauges under No. 8 to and including No. 9..... | .25 |
| All sketches (excepting straight taper plates varying not more than 4 in. in width at ends, narrowest end being not less than 30 in.)..... | .10 |
| Complete circles..... | .20 |
| Boiler and flange steel plates..... | .10 |
| "A. B. M. A." and ordinary firebox steel plates..... | .20 |
| Still bottom steel..... | .30 |
| Marine steel..... | .40 |
| Locomotive firebox steel..... | .50 |
| Shell grade of steel is abandoned. | |
| For widths over 100 in. up to 110 in..... | .05 |
| For widths over 110 in. up to 115 in..... | .10 |
| For widths over 115 in. up to 120 in..... | .15 |
| For widths over 120 in. up to 125 in..... | .25 |
| For widths over 125 in. up to 130 in..... | .50 |
| For widths over 130 in..... | 1.00 |
| TERMS.—Net cash 30 days. Pacific Coast base, 1.30c., f.o.b. Pittsburgh. | |

Sheets.—Minimum prices for mill shipments on sheets in carloads and larger lots, on which jobbers charge the usual advances for small lots from store, are as follows: Blue annealed sheets, No. 10 and heavier, 1.65c.; Nos. 11 and 12, 1.70c.; Nos. 13 and 14, 1.75c.; Nos. 15 and 16, 2.05c. Box annealed sheets, Nos. 17 to 21, 2c.; Nos. 22 to 24, 2.05c.; Nos. 25 and 26, 2.10c.; No. 27, 2.15c.; No. 28, 2.20c.; No. 29, 2.25c.; No. 30, 2.35c. Galvanized sheets, Nos. 13 and 14, 2.30c.; Nos. 15 and 16, 2.40c.; Nos. 17 to 21, 2.50c.; Nos. 22 to 24, 2.65c.; Nos. 25 and 26, 2.85c.; No. 27, 3.05c.; No. 28, 3.25c.; No. 29, 3.35c.; No. 30, 3.60c. Painted roofing sheets, No. 28, 1.55c. per square. Galvanized roofing sheets, No. 28, 2.80c. per square for $2\frac{1}{2}$ -in. corrugations.

Wrought Pipe.—Discounts on steel pipe, $\frac{3}{4}$ to 6 in., in carloads to the general trade, are 80 and 5 per cent. off list, and on iron pipe, $\frac{3}{4}$ to 6 in., are 77 per cent. off list, while to the largest jobbers one point on the base and 5 per cent. differential additional are allowed. Regular discounts to jobbers in carloads, to which 1 per cent. on the base and 5 per cent. differential are allowed to the large trade, are as follows:

| | Steel merchant pipe. | | Genuine iron pipe. | |
|--|----------------------|-------|--------------------|-------|
| | Black. | Galv. | Black. | Galv. |
| $\frac{1}{4}$ to $\frac{1}{2}$ in..... | 72 | 56 | 69 | 53 |
| $\frac{3}{4}$ in..... | 73 | 59 | 70 | 56 |
| $\frac{1}{2}$ to 6 in..... | 76 | 64 | 73 | 61 |
| $\frac{3}{4}$ to 6 in..... | 80 | 70 | 77 | 67 |
| 7 to 12 in..... | 75 | 60 | 72 | 57 |
| Extra strong, plain ends: | | | | |
| $\frac{1}{4}$ to $\frac{3}{4}$ in..... | 65 | 53 | 62 | 50 |
| $\frac{1}{2}$ to 4 in..... | 72 | 60 | 69 | 57 |
| $\frac{3}{4}$ to 8 in..... | 68 | 56 | 65 | 53 |
| Double extra strong, plain ends: | | | | |
| $\frac{1}{4}$ to 8 in..... | 61 | 50 | 58 | 47 |

* Iron prices are for 7 to 8 in.

Boiler Tubes.—Regular discounts are as follows:

| Boiler Tubes. | Steel. |
|---|--------|
| 1 to $1\frac{1}{4}$ in..... | 50 |
| $1\frac{1}{4}$ to $2\frac{1}{4}$ in..... | 62 |
| $2\frac{1}{4}$ to 5 in..... | 70 |
| $2\frac{1}{2}$ in..... | 64 |
| 6 to 13 in..... | 62 |
| $2\frac{1}{4}$ in. and smaller, over 18 ft. long, 10 per cent. net extra. | |
| $2\frac{1}{2}$ in. and larger, over 22 ft. long, 10 per cent. net extra. | |

Wire Rods.—Bessemer rods, \$33; chain rods, \$33; basic rods, \$34.

Chicago.

FISHER BUILDING, March 31, 1909.—(By Telegraph.)

Owing to the complexity of issues involved in the present industrial situation, it is difficult to measure with accuracy the degree of impetus given to buying by the late price cut in rolled products. But that it has been effective to this end in a considerable degree is unmistakably shown in the increased activity observed in steel mill operations. This is particularly true of the various plants of the Steel Corporation in this district, all of which are at present running fuller than at any time within a year. While consumers continue to gauge their requirements conservatively, they are buying more liberally, and in some lines at least there seems to be less apprehension of a radical decline below the present level, which is gradually becoming more settled. Sheets, plates, steel bars and structural shapes are subject to but little shading below the quoted Pittsburgh price, except for the slight modification of the freight differential on the last three commodities in favor of the Chicago market. Rail orders, though coming in lots of modest size, are numerous enough to extend the rolling schedule of the South Works over a considerable period. New rail orders entered last

week totaled 37,600 tons, divided between the Gary Works and the Lorain Works, the larger portion going to the latter interest. The first notification of wage reductions in Western mills was posted this week in the plants of the Republic Iron & Steel Company.

Pig Iron.—Interest in pig iron is this week centered in the transactions of Southern producers, who are reported to have placed about 50,000 tons with the leading cast iron pipe maker. It is understood that this purchase was the direct result of the securing of the San Francisco pipe order, amounting to a little more than 45,000 tons, and since shipments on this order will extend throughout the year, it is assumed that the iron bought is for delivery through the same period. The sellers comprised two or more interests, the Tennessee Coal, Iron & Railroad Company having taken 12,000 tons. Special significance attaches to this transaction, not only because of the amount of iron involved, but on account of the line it furnishes as to values on second half iron. Part at least, and it is generally believed that all, of the 50,000 tons was placed on the basis of \$11, Birmingham, for No. 2 foundry. In the present condition of the market it would seem that such a test should disclose the bottom price on extended deliveries and so clear the atmosphere of doubt respecting the ultimate basis of second half contracts. Trade in the local market is extremely quiet. Melters are buying only such lots as are needed to piece out their stocks, but there is a steadily increasing inquiry for prices on third quarter iron. These, indeed, are assuming a more positive tone, and sellers are hopeful of a more active market in the near future. A prominent Southern producer sold, in small lots ranging from 100 to 300 tons, an aggregate of 1000 tons in this market last week for delivery through the third quarter, at \$11, Birmingham. There are many rumors floating of \$10.50 iron, but in no instance can they be confirmed. Sellers very emphatically deny that any such prices have been made, even for spot shipments. The following quotations are for April, May and June delivery, f.o.b. Chicago:

| | |
|---|--------------------|
| Lake Superior charcoal..... | \$19.50 to \$20.00 |
| Northern coke foundry, No. 1..... | 17.00 to 17.50 |
| Northern coke foundry, No. 2..... | 16.50 to 17.00 |
| Northern coke foundry, No. 3..... | 16.00 to 16.50 |
| Northern Scotch, No. 1..... | 17.50 to 18.00 |
| Southern coke, No. 1..... | 15.85 to 16.35 |
| Southern coke, No. 2..... | 15.35 to 15.85 |
| Southern coke, No. 3..... | 14.85 to 15.35 |
| Southern coke, No. 4..... | 14.35 to 14.85 |
| Southern coke, No. 1 soft..... | 15.85 to 16.35 |
| Southern coke, No. 2 soft..... | 15.35 to 15.85 |
| Southern gray forge..... | 13.85 to 14.35 |
| Southern mottled..... | 13.60 to 14.10 |
| Malleable Bessemer..... | 16.50 to 17.00 |
| Standard Bessemer..... | 17.90 to 18.40 |
| Jackson Co. and Kentucky silvery, 6 %..... | 19.90 to 20.40 |
| Jackson Co. and Kentucky silvery, 8 %..... | 20.90 to 21.40 |
| Jackson Co. and Kentucky silvery, 10 %..... | 22.90 to 23.40 |

(By Mail.)

Billets and Rods.—Buyers are trimming their orders to cover only current requirements. With all of the machinery builders only moderately busy, the demand for forging billets is slow and irregular. A sale of 50 tons of forging billets by a Pennsylvania mill is reported at \$28, Chicago, which indicates a gratifying degree of firmness in prices. There is very little doing in rods, the prices of which are without change.

Rails and Track Supplies.—New rail orders taken last week by the Illinois Steel Company aggregated 17,635 tons, of which 12,000 was taken by a leading Northern system, 1135 by a small Northern line, 3500 for the Lake Shore & Michigan Southern and 1000 additional on an order booked the week before from an Eastern road. Specifications on all these orders being for open hearth rails, they will prolong the activities of the Gary rail mill where they will be rolled. The Chicago Railways Company has placed an order for 20,000 tons of high girder rails with the Lorain Steel Company, to be supplied for the reconstruction of the traction system of the north side of the city. Outside of 5000 tons of rails now pending, there is not much new business in sight for the immediate future. Specifications for track fastenings are coming out in sufficient volume to keep the Joliet bolt and spike plants going practically full. Light rails continue to drag, and prices are lacking in firmness. The holding price for light rails, \$24 for 25 to 45 lb. sections, is occasionally shaded.

Structural Material.—Bids will be tendered this week on 2000 tons for the Steger Building and 300 tons for the Northern Trust Company's Building. Last week's transactions among fabricators were very light, those reported being 486 tons for the Kohler-Chase Building, San Francisco, which went to Milliken Brothers and 1100 tons for the Johns-Manville Building, Milwaukee, taken by the Wisconsin Bridge & Iron Company. Notwithstanding the low prices offered on structural work at the present time, builders are taking their time in placing contracts. A good deal of tonnage is being secured, most of which represents projects which will in all probability be put through. Specifications for plain material are coming out better than for months, and as a result the Illinois Steel Company's structural mill at the South Works is running full five days a week, one day

being devoted to making steel for the Bay View mills; there are enough specifications on hand, however, to keep it busy all the time on structural material. The generally accepted price is now 1.45c., Chicago, which figure is being well maintained.

Plates.—Plate business is growing, and the Illinois Steel Company is now in receipt of specifications large enough to keep both the universal and sheared plate mill going, the latter running full. The business is being supplied mainly in small lots from widely distributed sources, there being no conspicuously large orders among them. Prices appear to be pretty firmly grounded at 1.45c., Chicago, from which there is reported to be no shading of importance.

Sheets.—The demand for sheets continues to improve and prices are less disturbed by cutting at present than for months; in fact, there is no room for the small independent mills to get under the revised prices. The local mill at Indiana Harbor is running full, with specifications coming in very satisfactorily. Jobbers report a fair run of small orders, the aggregate of which is increasing. There is but little complaint of cutting in store prices, which are said to be well maintained at a reduction corresponding to that made by the mills.

Bars.—Steel bar specifications entered by the leading interest show an increase for March as against April of over 50 per cent., and the new demand, though coming in moderate lots, is fairly satisfactory. A steady gain for each month of the present year is also reported by an independent interest. The implement makers are already insisting on placing their season contracts, which ordinarily are not closed before July 1. Negotiations of this kind are now under way, and while it is believed no contracts have yet been formally closed, it is expected that the bookings of such business will be well under way within a few days. The low price of steel bars has cut into the bar iron trade, which is quiet. Steel bars are pretty firmly established at 1.35c., Chicago, while iron bars, nominally held at 1.40c., have sold as low as 1.27½c., while 1.20c. has been done on high carbon bars from rerolled stock.

Merchant Pipe.—Last week was somewhat more encouraging, the orders entered by the leading interest showing definite improvement over the preceding week. The inquiries were also more numerous and indicated a livelier interest among consumers, who, it is believed, will be compelled by increased consumption soon to begin buying more liberally. Prices are reported to be firm at the new level.

Boiler Tubes.—The prevailing quietness in both merchant and locomotive tubes has not been relieved by any quickening of demand and conditions in this market are not sensibly changed.

Merchant Steel.—While little new business is being entered, specifications from the jobbers and implement makers are somewhat larger. Buyers are beginning to show some anxiety regarding contracts for the new season and are ready to come into the market as soon as the mills are willing to open their books for such business.

Cast Iron Pipe.—Requirements of the city of Cheyenne have been cut from the original estimate of 20,000 tons to between 10,000 and 11,000 tons of 16 in. to 30 in. Other business in sight includes only small lots, the most of which are for small municipalities in the Southwest. We quote per net ton, Chicago, as follows: Water pipe, 4 in. in diameter, \$27.50; 6 to 12 in., \$26.50; 16 in. and up, \$24.50, with \$1 extra for gas pipe.

Metals.—A temporary strengthening of copper prices induced some hesitating buyers to place orders. The movement in this direction, however, was small in extent and did not include requirements beyond 30 to 60 days. Quite a good many inquiries came out from consumers desiring to keep in touch with developments, but the great majority of them were not productive of orders. Other metals are quiet, with no definite change of values, although lead is somewhat firmer. Old metals are moving slowly, with no appreciable fluctuation. Quotations are as follows: Casting copper, 12½c. to 13c.; lake, 13¼c. to 13½c., in car lots, for prompt shipment; small lots, ¼c. to ¾c. higher; pig tin, car lots, 31c.; small lots, 33c.; lead, desilverized, 3.95c. to 4.05c., for 50-ton lots; corroding, 4.20c. to 4.30c., for 50-ton lots; in car lots, 2¼c. per 100 lb. higher; spelter, 5c. to 5.10c.; Cookson's antimony, 10½c., and other grades, 9¾c. to 10¼c.; sheet zinc is \$7, f.o.b. La Salle, in car lots of 600-lb. casks. On old metals we quote: Copper wire, crucible shapes, 13c.; copper bottoms, 11¼c.; copper clips, 11c.; red brass, 11¼c.; yellow brass, 9c.; light brass, 7c.; lead pipe, 3.75c.; zinc, 2½c.; pewter, No. 1, 21c.; tin foil, 23c.; block tin pipe, 26c.

Old Material.—The market continues dull and inactive, the trades of the past week being confined to a few pick-up orders from consumers of no particular importance. As near as can be determined, prices are practically stationary. If dealers' yards were not so heavily stocked there would probably be more eagerness displayed to secure material at the present low level of values; but under the circumstances there is little room for further accumulations until some of

the large holdings are disposed of. It is understood that the principal part of the iron scrap in the only railroad list offered last week was disposed of on an exchange basis to a local maker of track fastenings. The only evidence as to the prices developed by this offering was the open bids of \$15.50 for old iron rails and \$11.75 on No. 1 wrought, which are reported to have been tendered. This week bids will be received on 4600 tons from the Great Northern, in which there are 1300 tons of wrought and 1500 tons of rerolling steel rails; 650 tons from the Chicago, Rock Island & Pacific and a few car lots from the Santa Fé. The following prices are per gross ton, f.o.b. Chicago:

| | |
|---|--------------------|
| Old iron rails..... | \$16.00 to \$16.50 |
| Old steel rails, rerolling..... | 13.00 to 13.50 |
| Old steel rails, less than 3 ft..... | 13.00 to 13.50 |
| Relaying rails, standard sections, subject to inspection..... | 22.50 to 23.50 |
| Old car wheels..... | 14.50 to 15.00 |
| Heavy melting steel scrap..... | 12.00 to 12.50 |
| Frogs, switches and guards, cut apart..... | 12.50 to 13.00 |
| Mixed steel..... | 10.75 to 12.25 |

The following quotations are per net ton:

| | |
|---|--------------------|
| Iron fish plates..... | \$14.00 to \$14.50 |
| Iron car axles..... | 17.50 to 18.00 |
| Steel car axles..... | 16.00 to 16.50 |
| No. 1 railroad wrought..... | 11.50 to 12.00 |
| No. 2 railroad wrought..... | 10.50 to 11.00 |
| Springs, knuckles and couplers..... | 11.50 to 12.00 |
| Locomotive tires, smooth..... | 13.00 to 13.50 |
| No. 1 dealers' forge..... | 9.00 to 9.50 |
| Mixed bushing..... | 7.00 to 7.50 |
| Iron axle turnings..... | 7.00 to 7.50 |
| Soft steel axle turnings..... | 6.50 to 7.00 |
| Machine shop turnings..... | 6.50 to 7.00 |
| Cast borings..... | 5.25 to 5.50 |
| Mixed borings, &c..... | 5.25 to 5.50 |
| No. 1 mill..... | 7.00 to 7.50 |
| No. 2 mill..... | 6.00 to 6.50 |
| No. 1 boilers, cut to sheets and rings..... | 8.00 to 8.50 |
| No. 1 cast scrap..... | 12.25 to 12.75 |
| Stove plate and light cast scrap..... | 11.25 to 11.75 |
| Railroad malleable..... | 11.00 to 11.50 |
| Agricultural malleable..... | 9.75 to 10.25 |
| Pipes and flues..... | 8.25 to 8.75 |

Birmingham.

BIRMINGHAM, ALA., March 29, 1909.

Pig Iron.—The market quotation is understood to be \$11.50, Birmingham, for No. 2 foundry, or to have declined 50c. since last report. As to whether the market value is correctly represented by figures quoted a definite statement is not warranted. Of the sales effected during the past week, which are estimated at 40,000 to 50,000 tons in the aggregate, the major portion of engagements is known to have been made at figures around \$11 per ton. The aggregate consists of several round lots, one of which involved some 20,000 tons, and it is quite probable that the figures accepted are not available on such small lots as are commonly in demand. A recent effort to secure better figures than \$11.50 for a lot of less than 1000 tons was unsuccessful, and a number of 100 to 300 ton lots are known to have sold for that price. There is yet no interest manifested, either by producers or the general foundry trade, as to deliveries beyond the first half, although of the tonnage referred to above, in the case of most significant engagements, the specifications probably cover shipments to cover the entire last half of the year. A feeling that prices have reached their lowest level generally prevails among the producers, by reason of the fact that present selling prices are in a number of cases known to be practically equal to the cost. The theory that the number of active furnaces will be decreased rather than attempt wage reductions and allow further accumulation of stocks is generally accepted, and the curtailment soon after April 1 is expected to be material. No figures are available as to the aggregate of stock accumulations in this district, but the number of requests that shipments be withheld are numerous. The melt has not been reduced to an appreciable extent, however, and it remains to be seen just how long founders' stocks will be adequate for their requirements.

Cast Iron Pipe.—The developments in this market in the past week are not of such a nature as to figure materially in a summary of conditions. Quotations are unchanged, and it is believed that prices now being asked will be maintained even if pig iron prices suffer further decline. This belief is supported by the present condition of order books and the outlook as presented. With the exception of the Cheyenne, Wyo., contract, which comes up for letting April 5, the prospects for the immediate future are comparatively small orders, but producers generally expect a liberal tonnage from the large cities that have deferred placing contracts for their requirement from time to time and preparations are being made for a larger output. The proposed reduction in the tariff on pipe is, of course, a consideration of note, and developments in that connection will be awaited with much interest. We quote water pipe as follows, per net ton, f.o.b. cars here: 4 to 6 in., \$26; 8 to 12 in., \$25; over 12-in., average \$24, with \$1 per ton extra for gas pipe. These quotations are probably shaded on large municipal contracts.

Old Material.—With indications favorable for a ma-

terial decrease in the rate of consumption by reason of the cessation of operations at leading steel mills, this market does not present additional strength over last week's report. Nominal quotations are not revised and we quote as follows, per gross ton, f.o.b. cars here:

| | |
|---------------------------------|--------------------|
| Old iron rails..... | \$13.50 to \$14.00 |
| Old iron axles..... | 14.50 to 15.00 |
| Old steel axles..... | 12.00 to 12.50 |
| No. 1 railroad wrought..... | 12.00 to 12.50 |
| No. 2 railroad wrought..... | 10.00 to 10.50 |
| No. 1 country wrought..... | 9.00 to 9.50 |
| No. 2 country wrought..... | 8.50 to 9.00 |
| No. 1 machinery..... | 9.50 to 10.00 |
| Tram car wheels..... | 10.50 to 11.00 |
| Standard car wheels..... | 12.00 to 12.50 |
| Stove plate and light cast..... | 7.50 to 8.00 |
| Cast borings..... | 4.00 to 4.50 |

Pittsburgh.

PARK BUILDING, March 31, 1909.—(By Telegraph.)

Pig Iron.—This morning the Republic Iron & Steel Company, operating four furnaces in the Youngstown District and two in the Shenango Valley, and the Shenango Furnace Company, operating three furnaces at Sharpsville, posted notices at their furnaces of a 10 per cent. reduction in wages effective April 1. This action will no doubt be followed by all the other blast furnace operators in the Mahoning and Shenango valleys, including the Steel Corporation. On February 10 last year there was a readjustment of blast furnace labor in the valleys, under which common labor was put at \$1.60; top and bottom fillers, \$2.20, and iron carriers, \$2.75 per day. Under the reduction just made, common labor will be paid \$1.45; top and bottom fillers, \$2, and iron carriers, \$2.50 per day. The pig iron market is almost stagnant, not enough being sold to fix prices. Consumers are not taking out their iron very promptly, and at some furnaces it is being piled quite rapidly. We quote Bessemer iron at \$15; basic, \$14.50; malleable Bessemer, \$14.25; No. 2 foundry, \$14.25, and gray forge, \$13.50, all at Valley furnace, the freight rate to Pittsburgh being 90c. a ton.

Steel.—Reports are current that both billets and sheet bars are being sold at delivered prices that net less than \$23, Pittsburgh, for billets and \$25 for sheet and tin bars. There is but little new inquiry for sheet or tin bars, some of the outside sheet and tin plate mills not having much to do.

(By Mail.)

The steel trade is contending with two adverse influences, one being the pending revision of the tariff, and the other the fear by consumers that prices have not yet touched bottom. The tariff is certain to be revised, but the bill as reported by the Ways and Means Committee is expected to be materially altered. As to prices, it would hardly seem that they are likely to go any lower than are now quoted by the leading steel interests on any large inquiries. The course of events in the past four or five weeks, or since February 19, when the market was declared open, shows that the large steel interests are going after business most aggressively. The prices, which were named a few days after the market was declared open, did not establish a bottom, as structural steel, plates, sheets, tin plate and other rolled products have sold since then at lower prices. These low prices have no doubt brought out increased business, but the smaller mills have not shared in this to any great extent, as many of them decline to meet the figures made by the leading interests. It is probable that matters in the steel trade will run along about as they are now until the new tariff is enacted. Plans are under way for work that will require an immense tonnage of steel in different forms, but conditions must first become more favorable. In the last half of the year the structural trade will probably be more active, and the pipe mills confidently expect a heavier demand for the larger sizes of pipe from projects now under way. The demand for steel bars, sheets and tin plate is expanding. The coke and scrap trades are dull with prices weak. The pig iron and billet markets are also quiet, there being very little new buying. Summed up as a whole, the tonnage of new business coming to the mills is heavier, but some of it is being taken at prices which even to the best equipped plants leave only a small margin of profit.

Ferromanganese.—Some inquiry has developed, amounting to 500 or 600 tons. We quote foreign 80 per cent. ferro at about \$42, seaboard, for prompt delivery, and \$43 for future delivery, the rate to Pittsburgh being \$1.95 a ton. We note a sale of about 30 tons at \$42, seaboard.

Ferrosilicon.—We quote 50 per cent. at \$58.50 to \$59, Pittsburgh, and note a sale of 150 to 200 tons for delivery over the next six months at a price equal to about \$58.50, Pittsburgh.

Muck Bar.—The market is stagnant, and we quote best grades made from all pig iron at nominally \$26, Pittsburgh.

Skelp.—On contracts for iron plates specifications are being received quite freely, and shipments on iron and steel skelp are heavier than for some time. On the larger sizes of sheared plates, some mills are filled up for several months. We quote grooved steel skelp at 1.25c. to 1.30c.; sheared,

1.35c. to 1.40c.; grooved iron, 1.50c. to 1.55c., and sheared iron, 1.60c. to 1.65c., all f.o.b. Pittsburgh.

Steel Rails.—A specification for 3000 tons of standard sections against a contract entered some time ago was the most important feature of the week's rail business of the Carnegie Steel Company. Orders and specifications were also received for about 1200 tons of light rails, the leanest week for some time. The Carnegie Company is entering some nice export orders for both standard sections and light rails, going after this trade vigorously. We quote standard sections at \$28, at mill; 25 to 45 lb. light rails, rolled from billets, at \$23, and 16 to 20 lb. at \$24, maker's mill. These prices are not shaded as much as some time ago.

Plates.—General orders are coming out more freely, and the two leading makers in this district are working on some large contracts for plates for steel cars and ore boats. There is enough of this tonnage to last six weeks or two months. For ¼-in. and heavier plates 1.30c., Pittsburgh, is the general quotation, but this price has been shaded on some recent orders.

Structural Material.—No local orders have been placed in the past week, but the advantages held out by the larger mills in making low prices has started a good many projects that otherwise would have lain dormant this year. It is said that a part of the New York Central inquiry of 30,000 tons for its Western lines have been placed. On small orders for structural steel 1.30c., Pittsburgh, is still being quoted, but this price has been materially shaded on large jobs.

Sheets.—New demand is steadily expanding, and this week the American Sheet & Tin Plate Company is operating close to 60 per cent. of its sheet capacity, showing a gain of 30 per cent. over its operations six weeks ago. Prices are pretty well held, and 2.20c. for No. 28 box annealed black sheets, and 3.25c. for No. 28 galvanized about represent the market. These prices might be slightly shaded by a few mills on very desirable orders.

Tin Plate.—The American Sheet & Tin Plate Company has started another works and now has about 90 per cent. of its tin plate capacity in operation. The tin mills are getting ready for the spring demand, and the leading makers will likely run approximately full for the next several months. Indications are that the demand from packers and the canning trade will be unusually heavy this year. The base price of \$3.40, Pittsburgh, on 100-lb. coke plates, is being well maintained.

Bars.—Concrete reinforcing concerns are placing some good sized orders for steel bars, and specifications against contracts are coming in more freely than for some time. The trade is gradually coming to the belief that 1.20c., Pittsburgh, on steel bars is a low price, and is showing more disposition to buy ahead. New demand for iron bars is quiet, consumers limiting orders to cover only current needs. We quote steel bars at 1.20c., base, Pittsburgh, and iron bars at 1.35c., but the latter price is slightly shaded by a few mills on desirable orders.

Hoops and Bands.—Buying is confined to small orders for current needs. It is evident that the consumption of hoops and bands this year will be lighter than for some years past, owing to the prohibition movement which has cut down the barrel trade. Regular prices in effect, which we are advised are being held, are 1.60c., base, for steel hoops, and 1.20c., base, for steel bands, one-half steel card extras, all f.o.b. Pittsburgh.

Railroad Spikes.—There is a little more inquiry for spikes from the railroads, but most of the buying is in small lots for repair work and not for new track laying. We quote railroad spikes at \$1.70 for 5½ x 9-16 in., and \$1.80, base, for the smaller sizes, in carload lots, 5c. per keg additional being charged for small lots.

Pipes and Tubes.—New orders entered by the mills in March were larger than in February. The Kansas Natural Gas Company has not yet placed its orders for 60 miles of 16-in. pipe, but is expected to do so in a short time. Spang, Chalfant & Co. have started up their big mill on 16-in. pipe, with work ahead for several months. It is stated that official discounts on both iron and steel pipe are being well maintained.

Boiler Tubes.—The demand for both merchant and locomotive tubes is only fair, the recent heavy reduction in prices not having stimulated buying to any extent. Railroads are only buying tubes to cover repair work under way, and the boiler shops are buying in small lots to meet actual needs.

Coke.—Efforts are still under way to consolidate a number of the leading coke plants, but it will probably be some time before it will be known whether anything will come of the matter. Financial conditions just now do not seem to favor such a project, but the parties back of the movement claim that there will be no trouble in financing the deal, if the coke makers are conservative in the values they put on their plants. An Ohio furnace interest is in the market for about 200 tons of furnace coke per day for last half of the year. Standard grades of furnace coke can be had at \$1.60 to \$1.65 per net ton, at oven, but some operators are

refusing to take less than \$1.75. For best makes of 72-hr. foundry coke from \$1.90 to \$2 for prompt shipment is being quoted, while on contracts \$2.25 to \$2.40 is being named. The output last week in the Upper and Lower Connellsville regions was 251,261 tons, a slight decrease over the previous week.

Iron and Steel Scrap.—This trade continues in very unsatisfactory condition. While stocks held by consumers are not heavy, there is a feeling that prices will go still lower. Dealers state that if they offer scrap at bargain prices they are able to effect sales, but at recognized values consumers are not interested. Prices on nearly all kinds of scrap, with the exception of heavy steel, are fluctuating freely, there sometimes being as much as \$1 a ton difference in sales of the same material made the same day. Some dealers are financially strong enough to hold their scrap, while others that have it loaded on cars are compelled to move it and accept the best prices they can get. Several railroad lists will be out this week, the Wheeling & Lake Erie and the Erie on April 2, and the New York Central April 3. The nearest point of delivery for the latter road is Buffalo, and very little of its scrap comes into the Pittsburgh District, but some of it goes to Youngstown and Cleveland. Dealers quote about as follows, per gross ton, f.o.b. Pittsburgh: Heavy steel scrap, \$13.75 to \$14.25; cast iron borings, \$7.25 to \$7.50; bundled sheet scrap, \$11 to \$11.25; No. 1 cast scrap, \$13 to \$13.25; No. 2, \$12.25 to \$12.50; No. 1 railroad wrought scrap, \$13.75 to \$14; sheet bar crop ends, \$15 to \$15.25; low phosphorus melting stock, \$16.50 to \$16.75; rerolling rails, \$14 to \$14.25; steel axles, \$15.75 to \$16; grate bars, \$10.25 to \$10.50; old car wheels, \$13.75 to \$14; machine shop turnings, \$9 to \$9.25; railroad malleable scrap, \$12.50 to \$12.75; locomotive tires, \$15 to \$15.50; locomotive axles, \$22 to \$22.50; iron rails, \$15.50. We note sales of about 400 tons of heavy steel scrap at \$14 to \$14.25; 150 tons of sheet bar crop ends at \$10.50 at seller's mill, and 200 tons at \$12, delivered, carrying a freight rate of about \$1 a ton.

The sales offices of the Sligo Iron & Steel Company formerly maintained in Pittsburgh will be removed April 1 to the general offices at Connellsville, Pa.

The S. Jarvis Adams Company, operating a foundry at Midland, Pa., has opened general offices in the German National Bank Building, Pittsburgh.

Cleveland.

CLEVELAND, OHIO, March 30, 1909.

Iron Ore.—While not ready to buy, furnacemen are showing much interest in prices, and the merchant firms are receiving many inquiries as to what the prices will be. So far not one of the leading producers is making a quotation below last season's prices. One important interest that has always acted independently in naming prices does not seem disposed to make any concessions from last year's schedule, taking the same position on the matter as the other large shippers. The inactivity in the pig iron market has affected ore shipments from the docks. The movement had been fairly good all the month, but in the past few days several consumers have ordered shipments suspended for the present. Ore prices at Lake Erie docks, per gross ton, are as follows: Old Range Bessemer, \$4.50; Mesaba Bessemer, \$4.25; old range non-Bessemer, \$3.70; Mesaba non-Bessemer, \$3.50.

Pig Iron.—The market is almost lifeless. The only local sales during the week have been a few very small lots, and no inquiries of any size have developed. The demand at Toledo and Detroit seems equally quiet. The only change noticed is an improvement in the Eastern demand. One local interest reports the receipt of quite a number of inquiries from the East, two or three large consumers, as well as a number of small ones, being in the market for foundry iron for second quarter delivery. This interest reports the sale of a few lots, but none over 200 tons. Prices are weaker, but there is not enough business to test the market. Some are refusing to quote No. 2 foundry lower than \$14.50, Valley furnace, but \$14.25 appears to be nearer the top of the market. Prices are lower in the Hanging Rock District and reports indicate that a price of \$14 for No. 2 might be shaded in that district. There are more orders to withhold shipments than a month ago. Foundries making light gray castings are fairly busy and are taking their iron on contract, but the heavy foundries have little work on hand and these are holding up shipments. The malleable melt does not improve and shipments are being held back by some consumers. For delivery through the second quarter we quote, delivered, Cleveland, as follows:

| | |
|---|--------------------|
| Bessemer | \$16.15 to \$16.40 |
| Northern foundry, No. 1 | 15.50 to 16.00 |
| Northern foundry, No. 2 | 15.00 to 15.50 |
| Northern foundry, No. 3 | 14.50 to 15.00 |
| Gray forge | 14.00 to 14.50 |
| Southern foundry, No. 2 | 15.85 to 16.35 |
| Jackson County silvery, 8 per cent. silicon | 20.05 |

Coke.—A local furnace interest covered its coke requirements for the last half at a price slightly lower than \$1.75 at oven for a standard Connellsville grade. We quote standard furnace coke at \$1.70 to \$1.85 for contract and \$1.50 to \$1.65 for spot shipment. For shipment through the second quarter we quote 72-hr. foundry coke at \$2 to \$2.25.

Finished Iron and Steel.—While no orders for large lots were placed, all mill agencies report a good volume of business in current orders, and specifications for all finished products. Some buyers are still holding back, believing that the bottom of the market has not been reached, and others are slow in placing orders, trying to get concessions here because of the reports that prices are not being maintained in some other sections. Buyers were never more active than at present in trying to secure shading of prices, but on steel bars, plates and structural material prices are being firmly maintained. The demand for steel bars continues good. Orders are plentiful from the implement makers, all of whose plants are very busy at present. A number of these have expressed their desire to enter into new contracts for the year beginning July 1 at present prices, but the mills so far are refusing to sell for deliveries beyond July 1 at the prevailing prices. Stimulated by the price reductions, the demand for plates shows an improvement. Boiler making plants have more work on hand than for some time, and some good orders are coming from this source. The demand for structural material in small lots ranging from 15 to 50 tons shows some improvement, orders coming largely from small fabricating plants and builders of heavy machinery. Bids will be received April 3 for the Dennison-Harvard Bridge, Cleveland, which will require 6300 tons of structural material. The Nickel Plate Railroad is expected to place the contract this week for 1600 tons of structural material for grade crossing elimination work in Cleveland. The new blast furnace to be erected in Cleveland by Corrigan, McKinney & Co., for which the steel work contract was let this week to the Variety Iron & Steel Works Company, will require about 1300 tons of plates and structural material. The King Bridge Company has not yet placed its order for 2400 tons of structural material for the Brotherhood of Engineers' Building, being unable to get a price concession. The demand for shafting shows considerable improvement, a number of car lots orders having been placed, but the keen competition is resulting in the shading of the recently revised prices. The demand for iron bars continues light. One of the local mills is closed down this week. Local mills quote iron bars at 1.25c., Pittsburgh, but the market is entirely open and low prices are being named to get business. Jobbers report some improvement in mill and warehouse business.

Old Material.—The market is about as dull as it has been for several months. Local mills bought some small lots during the week for immediate needs, but rejected offers of round tonnages at current prices. No inquiries are being received from the Pittsburgh territory. Prices have remained about stationary for two or three weeks and dealers express the belief that the bottom has been reached. Yard dealers who have large stocks are making no efforts to make sales at present prices and say that they will hold their scrap until the market becomes firmer. Dealers' prices per gross ton, f.o.b. Cleveland, are as follows:

| | |
|----------------------------------|--------------------|
| Old steel rails | \$12.50 to \$13.00 |
| Old iron rails | 16.00 to 16.50 |
| Steel car axles | 17.00 to 17.50 |
| Old car wheels | 14.00 to 14.50 |
| Heavy melting steel | 11.50 to 12.00 |
| Rerolling rails, 50 lb. and over | 21.50 to 22.50 |
| Agricultural malleable | 11.00 to 11.50 |
| Railroad malleable | 11.50 to 12.00 |
| Light bundled sheet scrap | 7.50 to 8.00 |

The following prices are per net ton, f.o.b. Cleveland:

| | |
|---------------------------------------|--------------------|
| Iron car axles | \$17.00 to \$17.50 |
| Cast borings | 6.00 to 6.50 |
| Iron and steel turnings and drillings | 7.00 to 7.50 |
| Steel axle turnings | 9.00 to 9.50 |
| No. 1 busheling | 10.00 to 10.50 |
| No. 1 railroad wrought | 12.00 to 12.50 |
| No. 1 cast | 11.50 to 12.00 |
| Stove plate | 10.00 to 10.50 |
| Bundled tin scrap | 9.00 |

Cincinnati.

CINCINNATI, OHIO, March 31, 1909.—(By Telegraph.)

The general impression is gained from interviews with representatives of the leading interests in rolled products that the fight is on in earnest and that nominal quotations on such items as are included in the open market are materially shaded. Steel bars are especially marked in this connection. April is bound to see a wholesale reduction in the output of blast furnaces, as the consumption, aside from that in pipe making, is entirely out of proportion to production, and there is no promise of improvement in the immediate future.

Pig Iron.—The close of March sees a radical change in the demeanor of the Southern furnaces, for whereas they studiously maintained for months an independent attitude, and continued energetically their make of iron without marked response from the consumer, they are now, with the buying disposition easier, actively going after business and inviting offers. The situation in the southern Ohio District sees little change save that one or two of the larger interests manifest a disposition to come in for a portion of the meager business that is stirring, and are taking business at prices always a little under the ruling quotations. With comparatively little inquiry for second half prices, there now seems to be a rather fixed figure of \$12, Birmingham, for No. 2 and of \$14.50 to \$15 on northern No. 2, Ironton furnace, for

delivery after July 1 and to the close of the year. Sales agents believe there will be a number of furnaces blown out during April, both in the South and the North. Citico at Chattanooga was blown out March 25 and another in Tennessee is expected to go out soon. The largest local deal heard of to-day is for 100 tons of analysis iron for the Schrieber Iron Works Company, maker of ornamental iron, on which \$11.50 and \$12 were the ruling quotations, varying somewhat in chemical properties. The American Seeding Machine interests are still feeling the market with offers under ruling quotations. Other inquiries pending are from a large southern Ohio manufacturer of engines; an Ohio car manufacturing concern that wants a couple of carloads of malleable; another in the Chicago District that asks for 100 tons of silicon 10 per cent.; a northern Ohio manufacturer 100 tons of high silicon and some foundry iron; the International Steam Pump Company, 200 tons for delivery to Buffalo and 250 tons to Holyoke. For immediate delivery and balance of the first half we quote, f.o.b. Cincinnati, with freight rates of \$3.25 from Birmingham and \$1.20 from the Hanging Rock District, as follows:

| | |
|--|--------------------|
| Southern coke, No. 1 foundry..... | \$14.75 to \$15.25 |
| Southern coke, No. 2 foundry..... | 14.25 to 14.75 |
| Southern coke, No. 3 foundry..... | 13.75 to 14.25 |
| Southern coke, No. 4 foundry..... | 13.50 to 14.00 |
| Southern coke, No. 1 soft..... | 14.75 to 15.25 |
| Southern coke, No. 2 soft..... | 14.25 to 14.75 |
| Southern coke, gray forge..... | 13.00 to 13.50 |
| Southern mottled..... | 12.50 to 13.00 |
| Ohio silvery, 8 per cent. silicon..... | 19.70 |
| Lake Superior coke, No. 1..... | 15.70 to 16.20 |
| Lake Superior coke, No. 2..... | 15.20 to 15.70 |
| Lake Superior coke, No. 3..... | 14.70 to 15.20 |
| Standard Southern car wheel..... | 22.25 to 23.25 |
| Lake Superior car wheel..... | 21.75 to 22.75 |

(By Mail.)

Coke.—Dealers report relatively better conditions in the coke market than in iron. Outside the Cincinnati District proper, jobbing foundries and those making small and miscellaneous castings are renewing contracts and taking coke on contract in good form. Furnace coke is inactive. Connellsville spot furnace grades are obtainable at \$1.50 per net ton, at oven, and on contract from \$1.65 to \$2, according to the individual views and desires of the customer. Pocahontas furnace is easy at \$1.75 spot or contract and Wise County \$1.75 to \$1.85, according to deliveries and conditions. In foundry grades Connellsville ranges from \$1.90 to \$2.40, Pocahontas from \$2 to \$2.25 and Wise County from \$2.10 to \$2.25.

Structural Material.—Builders are holding back, presumably for lower prices. There has been a fair run of business in carload lots, but no specifications for large tonnages. Dealers' stocks have been allowed to run down to the lowest ebb, and the feeling is, as in the case of other rolled products, that as soon as conditions improve there will be a heavy run of business from all directions.

Sheets.—The leading interest continues to report a good demand for black and galvanized sheets, orders, being restricted, however, to immediate needs, and neither buying nor selling factor evidencing any interest in forward shipments. Nominal quotations on mill shipments of galvanized sheets in carload and larger lots, delivered in this territory, are as follows. Nos. 13 and 14, 2.45c.; Nos. 15 and 16, 2.55c.; Nos. 17 to 21, 2.65c.; Nos. 22 to 24, 2.80c.; Nos. 25 and 26, 3c.

Bars.—Rumors of heavy cutting in the central districts on steel bars are plentiful, a price of 1.10c., Pittsburgh, having been heard in this connection. Tire is in excellent demand, mills making a specialty of this branch of the business being taxed to the utmost on deliveries to the vehicle, automobile and agricultural implement manufacturers.

Old Material.—The market continues stagnant, and dealers seem unwilling to offer any schedule of prices, the largest interests referring to it in much the same way as those concerned speak of the finished markets—everything off and nobody interested. As nearly as it can be gauged, the price on heavy melting steel is around \$10 to \$10.50, gross ton, and No. 1 railroad wrought about \$10. Cast borings are quotable at \$3.50 to \$4; turnings, \$4.25 to \$4.75; old car wheels, \$12.50, gross ton. A large local dealer is reported to have bought last week 5000 tons of railroad scrap at ridiculously low prices. Requests for holding up shipments are frequent.

The Lelong chain making process, which was described in *The Iron Age* of March 8, 1906, has been making progress. The Société Anonyme pour l'Exploitation des Brevets Lelong, of Bruxelles, Belgium, has disposed of the patents for Austria-Hungary and for England, where a company has been formed consisting of 10 large shipyards. A plant, specially built, at Buysinghen, between Hal and Bruxelles, operates under the patents for Belgium and Holland.

San Francisco.

SAN FRANCISCO, March 24, 1909.

A very perceptible improvement has taken place the last two weeks in the movement of all finished steel products. Prices appear to have reached bedrock, and now show little variation. The increased tonnage moving is attributed almost entirely to the open market, which has encouraged more extensive buying on the part of both merchants and the larger consumers. The local jobbers are now becoming convinced that the lower values will stimulate consumption, which from all indications would have grown to large proportions during the summer under any circumstances, and material additions are accordingly being made to stocks. Buying has been most general in merchant pipe and sheets, but orders have also been taken for good quantities of plates and structural material. There is a fair jobbing movement in merchant steel, though so far sheets and merchant pipe are not moving very freely to points in the interior of the State. While the oil interests have not begun to order to a large extent, their requirements will be large during the summer, and oil well machinery and equipment are moving in larger quantities than for many months. The demand for rails is only moderate at present, but several large orders are in prospect within the next 60 days. A fair buying movement in steel bars is going on. The local jobbing market in wire and nails has been unsettled, but conditions in this line are improving. The machinery market is better than for about six months, machine tools and planing mill supplies being particularly active, though the requirements of the mining interests have been smaller than was anticipated.

Structural Material.—The majority of the larger structural contracts which were in prospect at the beginning of the year have been let, and while there is a considerable tonnage, covering several important buildings, to be placed in the next two or three months, most of the larger work now in prospect is of a more or less tentative nature. Most of the work for which plans have been announced will probably be carried out within the year, but it is impossible to say when the orders are likely to be given out. The fabricators anticipate, however, an increase of small work which will prevent any marked falling off in the movement. The American Bridge Company has taken more work in the last two weeks than for some time, including 800 tons for the Mechanics' Institute, 250 tons for county bridges near Stockton, Cal., and a moderate lot for a city hall at Sacramento. The contract on pier 34, to be used by the Western Pacific, has been let to the McClintic-Marshall Company; about 400 tons will be required. Brode & Clark have taken a small contract for the Gladding, McBean & Co. building and a contract for the Odd Fellows' Hall was awarded to the Ralston Iron Works. Several jobs of 100 to 300 tons are likely to be awarded within a week or two. Of the work now coming up, that on the San Francisco harbor is the most important. Bids on pier 36, requiring about 1200 tons, will be opened April 8. A steel and concrete bulkhead, requiring a considerable tonnage of structural shapes and bars, will be built at the foot of Stuart street, and a similar bulkhead is to be built at the foot of Mission street for a new ferry building. Work on a number of other piers will be started during the year. A bill has passed the State Legislature providing for a bond issue of \$9,000,000 for further harbor improvements. The supervisors have tentatively decided to build a new city hall on the present site, and will call a bond election next June to provide \$4,000,000 for carrying out the work. The Olympic Club of this city is now working on plans for its new building. It is reported that over \$500,000 will be spent on the United States Subtreasury Building here. The Savings & Loan Society will let contracts in May for a seven or eight story building. Plans are also being drawn for a 10-story building for the White Investment Company at California and Battery streets. The Commercial Club of Tacoma, Wash., is making plans to finance a 12-story steel frame building in that city.

Rails.—While no important orders have been taken recently, an increasing tonnage is moving, consisting for the most part of small lots for logging roads and street car lines. Several large orders, however, will probably be placed in a month or two. While the promoters of California railroad projects are saying little at present, some important railroad building is practically certain to be carried out during the year. Representatives of C. N. Smith, the Minnesota lumberman, have purchased a terminal site at Sacramento, and a right of way is practically complete between the terminal and the Smith timber holdings south of Lake Tahoe. Merchants of Eureka, Cal., are petitioning Mr. Harriman, who is now in this city, to complete his line in that city, which would require about 100 miles of new track. The Mount Hood Railroad of Hood River, Ore., is extending its line 6 miles. Purchases are likely to be made at any time by F. S. Granger for a line between Fresno and Hanford, Cal.

Pig Iron.—While the local melters are increasing their operations to some extent, there is still no general buying movement, orders being limited to a few tons at a time for

spot delivery. The current demand is fully equaled by the constant arrivals, preventing any perceptible reduction of stocks held by either importers or foundries. A considerable quantity is being placed for future delivery, but buyers take little interest, and can only be induced to buy by liberal concessions. The leading importers, however, anticipate a more general movement during the summer, when they expect to effect a material reduction in their holdings. While some sales are made at lower figures, most of the importers are quoting \$22.50 on Continental iron and \$25 on Scotch. No. 1 Chinese iron is offered at \$22.75.

Coke.—Stocks of coke have been somewhat reduced of late, and the spot market shows some improvement, though it is difficult to place any large quantities for future delivery. Spot quotations are \$11 for German Syndicate coke and \$13 for English.

Cast Iron Pipe.—After holding off for two weeks in the effort to secure concessions from the railroads, the Board of Public Works has awarded the contract for 45,000 tons of cast iron pipe for the salt water fire protection system to the United States Cast Iron Pipe & Foundry Company, whose bid was the only one received. A freight rate of \$11 per ton has been made by the railroads for the municipal shipments. This is the only contract of any size that has been closed since the middle of the month, though a few carloads are moving to other coast points. It is believed here that an order of this magnitude coming from San Francisco has given the pipe industry an impetus that will be felt throughout the year, and which will cause additional inquiries in other parts of the coast. The United States Cast Iron Pipe & Foundry Company has also taken a contract for a moderate lot for a fire protection system at Bisbee, Ariz. The town of Myrtle Point, Ore., has issued \$22,000 bonds to install a municipal water system. A number of 8-in. water mains, to cost about \$150,000, are soon to be laid in Portland, Ore. The Monterey County Water Works proposes to lay a system of 6-in. mains in Pacific Grove, Cal., for fire protection. A number of other water works projects are coming up at various parts of the coast, but in most cases the material to be used has not been decided.

Merchant Pipe.—The reduction in values has now given a decided impetus to business. More orders have been booked by the leading interest this month than in the same length of time for nearly a year past. The movement, however, is at the moment almost entirely from manufacturer to jobber, as the retail movement has not opened up to any extent, and little inquiry is being received from the oil districts. Prices are well established and are firmly maintained by all interests. The town of Gridley, Cal., will open bids March 25 for 10,000 ft. of 2-in.; the city of San Bernardino has ordered 4000 ft. of 4-in., 4000 ft. of 3-in. and 1000 ft. of 2-in. black pipe, and the city of Los Angeles is again in the market for casing. The Twenty-five Oil Company in the Midway field is about to install a pipe line system throughout its property for the conveyance of the output of the separate wells to the two steel storage tanks, the contract for pipe being placed with the Lacey Company of Los Angeles.

The Rix Compressed Air & Drill Company, agent for Regal gas engines and several lines of mining machinery, is opening a store in Los Angeles.

The Iron Molders' Union has asked the proprietors of foundries to consider a new set of shop rules.

Two recent incorporations at Los Angeles are the Automatic Car Coupler Company, capital stock \$50,000, by F. R. Bonney, F. H. Norwood, W. H. Soale, K. Elliott and C. H. Wills, and the Western Heavy Hardware Company, capital stock \$75,000, by C. H. Priest, F. W. Kennedy, W. D. Alexander, F. W. Thompson and E. Jungquist.

A. E. Eberhart, general manager of the Pioneer Steel Company, Tacoma, Wash., has received orders to proceed with the work of erecting the plant.

The Southern Pacific will soon commence work on a large car shop at Roseville, Cal., and the Northwestern Pacific is preparing to establish car shops at San Rafael.

Creditors have filed a petition in bankruptcy against the American Foundry Company of this city.

St. Louis.

St. Louis, March 29, 1909.

Reports respecting trade conditions in iron and allied products vary from activity to stagnation, according to the department of the business, and even in the same lines there is unevenness to be noted. Pig iron continues dull, while for structural material the demand is improving. Iron works turning out special machinery are in some cases running on full time. Manufacturers of agricultural machinery and wagon material are busy. The railroads are liberal purchasers of track supplies. Scrap iron dealers complain of extreme apathy and state there is little demand except for relaying rails. Pig lead and spelter are unsettled and the action of Congress is being closely watched.

Coke.—While there is some demand, it is of a hand to mouth character, coming mainly from the trade that buys little and buys often. It is not expected there will be much improvement until the demand for pig iron is better. Prices are ruling steady and practically unchanged. We quote standard 72-hr. foundry \$2.10 to \$2.15, at oven, Connells-ville, for prompt shipment, and \$2.25 to \$2.50 for delivery over the year. Orders for contract coke are coming in quite freely.

Pig Iron.—Some sales agencies report a fair number of inquiries received during the week, and that sales resulted for lots of moderate size, running from 100 to 300 tons. Others state they are not effecting sales and have heard from but few of their customers. Requests to defer shipping on contract are being received. It would appear that some foundries are quite busy and that others are experiencing very slack demand. There does not seem to be any speculative buying and but little disposition to anticipate wants beyond the first half. At the close there are indications of weakness, and while some Southern furnaces refuse to sell at current figures, it is believed others would accept a firm offer of 50c. per ton less. We quote No. 2 foundry at \$11.50, Birmingham, for shipment over the second and third quarters.

Lead, Spelter, Etc.—The demand for pig lead is fairly good and the market is firm, at 3.87½c. to 3.90c. Lead ore is steady, at \$25 to \$28 per 1000 lb., base, Joplin. Spelter is in moderate inquiry, at 4.65c. to 4.70c. asked. Zinc ore is ruling at \$36 to \$38 per ton, base. There is a fair demand from both galvanizing and brass interests, but business in metals is lighter than last week, though inquiry for future shipment is good. Tin is 37½c. per 100 lb. higher. Antimony is up 5c. per 100 lb. Copper is ¼c. higher.

Old Material.—Dealers still complain of extreme dullness, and most of their attention is being given to business already booked for which shipping instructions are being received. Relaying rails are scarce and wanted at full prices. There are no offerings of scrap reported by railroads. Quotations are merely nominal for the most part and are unchanged from last week. We quote, per gross ton, f.o.b. St. Louis, as follows:

| | |
|--|--------------------|
| Old iron rails..... | \$14.00 to \$14.50 |
| Old steel rails, rerolling..... | 12.00 to 12.50 |
| Old steel rails, less than 3 ft..... | 11.50 to 12.00 |
| Relaying rails, standard sections, sub- ject to inspection..... | 23.50 to 24.00 |
| Old car wheels..... | 12.50 to 13.00 |
| Heavy melting steel scrap..... | 11.50 to 12.00 |
| Frogs, switches and guards, cut apart..... | 11.50 to 12.00 |
| Mixed steel..... | 7.50 to 8.00 |

The following quotations are per net ton:

| | |
|---|--------------------|
| Iron fish plates..... | \$12.50 to \$13.00 |
| Iron car axles..... | 16.00 to 16.50 |
| No. 1 railroad wrought..... | 11.00 to 11.50 |
| No. 2 railroad wrought..... | 10.00 to 10.50 |
| Railway springs..... | 9.50 to 10.00 |
| Locomotive tires, smooth..... | 11.00 to 11.50 |
| No. 1 dealers' forge..... | 8.50 to 9.00 |
| Mixed borings..... | 4.00 to 4.50 |
| No. 1 boilers, cut to sheets and rings..... | 7.00 to 7.50 |
| No. 1 cast scrap..... | 10.00 to 10.50 |
| Stove pipe and light cast scrap..... | 7.50 to 8.00 |
| Railroad malleable..... | 8.00 to 8.50 |
| Agricultural malleable..... | 7.50 to 8.00 |
| Pipes and flues..... | 7.50 to 8.00 |
| Railroad sheet scrap..... | 7.00 to 7.50 |
| Railroad grate bars..... | 8.00 to 8.50 |
| Machine shop turnings..... | 6.50 to 7.00 |

The Parlin-Orendorff Machinery Company has bought a lot of 80 ft. frontage on Broadway, between Warren and Benton streets, on which it will at once build a seven-story structure to cost \$200,000, which will be used for salesroom and warehouse purposes in its agricultural implement business.

The South Bend Iron Works Company, holding corporation for the Oliver Chilled Plow Works, has recently purchased a lot on North Broadway on which it will erect a six-story building, 80 x 150 ft.

Buffalo.

BUFFALO, N. Y., March 30, 1909.

Pig Iron.—The market is dull all along the line and slightly weaker. The demand is far below normal. The majority of producers are not competing for business at the extreme low level of prices now prevailing, except for such trade as is very close to the point of production, preferring to store their products. Almost any grade of iron except charcoal can be procured between \$15 and \$16, Buffalo. The nominal schedule of prices for second quarter delivery, f.o.b. Buffalo, is as follows:

| | |
|----------------------|--------------------|
| No. 1 X foundry..... | \$15.75 to \$16.00 |
| No. 2 X foundry..... | 15.25 to 15.50 |
| No. 2 plain..... | 15.00 to 15.25 |
| No. 3 foundry..... | 15.00 to 15.15 |
| Gray forge..... | 14.75 to 15.00 |
| Basic..... | 15.50 to 15.75 |
| Charcoal..... | 20.00 to 20.50 |

Finished Iron and Steel.—There has been a perceptible improvement in orders for bars, angles, plates and shapes,

the orders being for larger lots on the average. Inquiry, however, has slackened somewhat in these lines, as compared with the past few weeks. In structural steel and fabricated work competition is very keen on what is being offered and prices are cut to rock bottom. The American Bridge Company, for the first time in two years, is aggressively after business in this territory. During the week the National Construction Company, Syracuse, has been awarded contract for steel required for the Fulton Paper Mill, Fulton, N. Y., about 500 tons. The Carnegie Steel Company received contract for the reinforcing bars for the Carborundum Company's plant addition at Niagara Falls, 275 tons, and the Buffalo Structural Steel Company secured contract for the steel for the addition to the Geo. J. Meyer Malting Company's plant, Buffalo. The Wm. Miller & Sons Company, Pittsburgh, was low bidder on the revised plans for the Onondaga Hotel, Syracuse, revised bids for which were opened this week.

Old Material.—The market continues dull and unsettled and is practically deadlocked, neither buyer nor seller showing any disposition to do business. The following nominal schedule of prices per gross ton, f.o.b. Buffalo, approximately represents the range for the limited amount of business being transacted:

| | |
|---|--------------------|
| Heavy melting steel scrap..... | \$13.75 to \$14.25 |
| Low phosphorus steel scrap..... | 17.50 to 18.00 |
| No. 1 railroad wrought..... | 13.50 to 14.00 |
| No. 1 railroad and machinery cast scrap | 13.75 to 14.25 |
| Old steel axles..... | 14.50 to 15.50 |
| Old iron axles..... | 17.50 to 18.00 |
| Old car wheels..... | 14.00 to 14.50 |
| Railroad malleable..... | 12.50 to 13.00 |
| Boiler plate..... | 11.00 to 11.50 |
| Locomotive grate bars..... | 11.50 to 12.00 |
| Pipe..... | 10.50 to 11.00 |
| Wrought iron and soft steel turnings.. | 7.00 to 7.50 |
| Clean cast iron borings..... | 6.00 to 6.50 |
| No. 1 busheling scrap..... | 12.25 to 12.75 |

Philadelphia.

PHILADELPHIA, PA., March 30, 1909.

The situation shows no betterment. In crude materials the demand continues light, with an entire absence of business in some lines. A fairly good movement in structural material is noted; while no fresh contracts of importance have been placed, considerable business is pending. In the other lines of rolled products transactions are irregular. A waiting tendency characterizes the whole market, consumers taking only requirements for early needs. Neither buyer nor seller is disposed to contract for extended delivery in the present state of the market. Protests are being extensively made against the metal schedule of the Payne tariff bill, and until something definite is done in this matter, business will no doubt drag. Wage reductions continue to be made, effective in many instances on April 1; some opposition has been encountered to the reductions in puddlers' wages, but it is not expected to be serious, owing to the present depressed condition of business.

Pig Iron.—The market is practically at a standstill, consumers showing no disposition to take anything beyond what is needed for near requirements. Many overbought some months ago, particularly the steel makers, and such consumers are entirely out of the market. There has been considerable curtailment in deliveries and stocks on some furnace banks are accumulating quite rapidly. A sharp restriction in production is expected, therefore, in the very near future by a number of producers. The Eastern Pig Iron Association, representing 44 furnaces, at a meeting in this city last week, placed itself on record regarding the proposed tariff bill, as follows: "It is the sense of this meeting that the Payne Tariff bill, as reported, is too radical in all its features applying to the ore, iron and steel schedule, and it is recommended that each member use every effort to urge his representatives to oppose the bill." While there was a considerable reduction in the tonnage of unfilled orders, as shown by the association's statistics, the accumulation of stocks on furnace banks was not as large during the first three weeks of March as had been anticipated. The general situation, as far as pig iron is concerned, is of a waiting character. Prices are by no means strong, and while the market has not been seriously tested, there is hardly a doubt that lower prices than those prevailing for small lots could be realized on a round tonnage. Transactions have been small and unimportant. Sales of foundry grades have been confined to small lots, at prices ranging from \$16.25 to \$16.50, delivered, for No. 2 X. Pipe makers have taken more iron, two sales of low grade being reported by local concerns, one of 2500 tons at \$15.25, delivered, and another of 3000 tons at \$15, for April, May and June delivery. There has been more effort made to dispose of Southern foundry irons, and offerings at \$11, Birmingham, for No. 2 have failed to bring out any material business. Virginia foundry irons have been inactive; some small sales are reported at quoted prices, and the leading grades are being pretty firmly held. In forge iron for mill purposes some little inquiry is reported, with light sales around \$15 to \$15.25, delivered. The steel making grades of iron are un-

called for. The principal buyers are pretty well covered, and in the absence of business basic has sagged to \$15, delivered. There has been no inquiry for low phosphorus iron. Quotations on both basic and low phosphorus are entirely nominal. For small lots of standard grades the following range of prices is named for early delivery in buyers' yards, eastern Pennsylvania and nearby territory:

| | |
|--|--------------------|
| Eastern Pennsylvania, No. 2 X foundry..... | \$16.25 to \$16.50 |
| Eastern Pennsylvania, No. 2 plain..... | 15.75 to 16.00 |
| Virginia, No. 2 X foundry..... | 16.75 to 17.00 |
| Virginia, No. 2 plain..... | 16.25 to 16.75 |
| Gray forge..... | 15.00 to 15.25 |
| Basic..... | 15.00 to 15.25 |
| Low phosphorus..... | 21.00 |

Ferromanganese.—No fresh demand has developed for delivery in this territory, although some business for Western shipment is reported at close to \$42, Baltimore, which price continues to be nominally quoted by the majority of sellers.

Billets.—Consumers are taking moderate lots on old contracts, but there is no fresh business of consequence before the trade, and until buyers show a disposition to place orders producers continue to make nominal quotations only. Ordinary rolling steel for delivery in this territory is nominally quoted at \$25.40, forging billets taking the usual \$2 a ton advance, the customary extras applying.

Plates.—There has been a fair run of small business, running up to 100 tons, but very little demand for any heavy lots is reported. Buyers show an inclination to contract for forward delivery at present prices, but mills generally refuse to accept such business, being satisfied to take only current business at the present low prices. Several large tonnages which have been before the trade for some time continue to be held in abeyance. Eastern mills maintain quotations pretty firmly, 1.45c. to 1.55c., dependent on quantity, being pretty generally quoted for delivery in this territory, the usual extras applying.

Structural Material.—The most important transaction before the local trade, the Curtis Building, requiring some 14,000 tons of material, has not yet been awarded, although tenders went in last Thursday. Some announcement regarding this is expected before the end of the week. Several other heavy tonnages for railroad and building work are pending. Bids have been asked for an addition to the Real Estate Trust Building, requiring about 600 tons, and several smaller propositions are out. Fabricators are still understood to be naming rather low prices for finished work, but on plain material in small and moderate quantities mills name 1.45c. to 1.55c., delivered according to specification.

Sheets.—Orders are small, and of a day to day character. The situation is not strong and buying is hardly as active as it was before prices were reduced. Mills are less actively engaged, consumers taking only small lots to cover immediate needs. For moderate prompt lots, delivered, the following range of prices is named: Nos. 18 to 20, 2.40c.; Nos. 22 to 24, 2.50c.; Nos. 25 and 26, 2.60c.; No. 27, 2.70c.; No. 28, 2.80c.

Bars.—The trade is unsettled and mills are operating irregularly. Prices show a wide range and buyers are inclined to await more stable conditions before placing orders for any material quantities, taking in the meantime small lots for immediate consumption. Some little business has been done in steel bars at 1.35c. to 1.40c. delivered. Refined iron bars are quoted from 1.37c. to 1.47c., the lower quotation applying to mills making a limited run of sizes, while common iron bars are quoted from 1.28c. to 1.35c. delivered.

Old Material.—More activity has been shown in some classes of old material. Consumers of heavy melting steel particularly have come into the market, and several round lots have been sold at \$13.50, delivered, including 2300 tons of old rails. Rolling mill material is still quiet, owing to uncertain labor conditions. The market is stronger in most grades, and a better feeling in general is noted. Quotations do not show as wide a variation, but are still largely nominal, ranging about as follows for deliveries in buyers' yards, eastern Pennsylvania and nearby points:

| | |
|----------------------------------|--------------------|
| No. 1 steel scrap and crops..... | \$13.25 to \$13.75 |
| Low phosphorus..... | 17.00 to 18.00 |
| Old steel axles..... | 17.00 to 17.50 |
| Old iron axles..... | 18.00 to 19.00 |
| Old iron rails..... | 17.00 to 17.50 |
| Old car wheels..... | 14.00 to 15.00 |
| Choice No. 1 R. R. wrought..... | 15.00 to 15.50 |
| Machinery cast..... | 14.00 to 14.50 |
| Railroad malleable..... | 12.50 to 13.00 |
| Wrought iron pipe..... | 13.00 to 13.50 |
| No. 1 forge fire scrap..... | 12.00 to 12.50 |
| No. 2 light iron..... | 7.00 to 8.00 |
| Wrought turnings..... | 9.75 to 10.25 |
| Stove plate..... | 11.25 to 11.75 |
| Cast borings..... | 8.00 to 8.50 |
| Grate bars..... | 11.50 to 12.00 |

Coke.—A trifle more inquiry is to be noted, although sales do not develop very satisfactorily. Buyers would contract for extended delivery, but sellers generally will not accept such business at to-day's prices. For large lots of furnace coke as low as \$1.45 at oven has been named, but average business commands \$1.50 to \$1.75, with some sellers holding at still higher figures, dependent on quantity

and delivery. Foundry coke is not active, some small business being reported at \$1.90 to \$2.10 at ovens. For delivery in this vicinity the following range of prices is named:

| | |
|---------------------------------|------------------|
| Connellsville furnace coke..... | \$3.75 to \$3.90 |
| Foundry coke..... | 4.15 to 4.40 |
| Mountain furnace coke..... | 3.35 to 3.50 |
| Foundry coke..... | 3.75 to 4.00 |

Metal Market.

NEW YORK, March 31, 1909.

Pig Tin.—It is unusual for a good business in tin to be done on Saturday, but the only good day's business in the last week was transacted March 27. Tin was sold for several dates of forward delivery and at varying prices. Quotations during the week have advanced, and the market is now considerably stronger than a week ago. The range of prices during the week has been as follows:

| | Cents. |
|---------------|----------------|
| March 24..... | 28.40 to 28.50 |
| March 25..... | 28.55 |
| March 26..... | 28.85 |
| March 27..... | 28.90 to 29.05 |
| March 29..... | 29.15 |
| March 30..... | 29.10 |
| March 31..... | 29.50 |

These are the highest prices of the year. It is difficult to assign any one particular cause for Saturday's good business, but it probably was due to the decidedly better feeling in trade which was noted in all lines of the metal business. The advance on Monday was due to higher prices from London, and this undoubtedly was brought about by the good business done in New York on Saturday. The Banca sale on March 25 went at the relatively high figure of 28.87½c., and amounted to 2000 tons. The arrivals in March will be 5292 tons, and the deliveries into consumption 3900 tons. The unusually large deliveries are accounted for by the leading consuming interest shipping considerable tin to the interior, and likewise withdrawing it from reporting warehouses. The market closes strong to-day at £134 7s. 6d. for spot and £135 7s. 6d. for futures.

Copper.—A continuance of the good business done last week is noted in the trade, and it is now known that at least 25,000,000 lb. were sold last week for domestic consumption. The latter part of the week business fell off somewhat, but there was a fair buying by consumers in 100,000-lb. lots for nearby deliveries. The buying has had a better tone to it than in a long time and the volume of business done, taken as a whole, is considerable. Prices have slowly advanced, which is probably one of the best signs. Electrolytic was sold on Tuesday at 12.62½c., net cash, and is available at that figure to-day. Some sales have been made at 12.75c., delivered, 30 days. Lake copper is more or less nominal, the three larger sellers being practically out of the market; still, good grades are available at 13c., although one seller refused an offer of 13.12½c. for a lot of 100,000 lb. Casting copper is higher than usual, being quoted at 12.50c. It is scarce. This is easily accounted for by the relatively small amount made now and the scarcity and high price of scrap. The situation, however, has its artificial features, and a buying movement of some magnitude had been long overdue. Consumption has improved slightly, but is at a rate probably less than 50,000,000 lb. per month, as far as domestic users are concerned. In Europe business is fair, but the decline in the London market March 30 put a considerable damper on speculative enthusiasm. The steadiness to-day is helping matters. The exports for the month of March, with but two days lacking, were 20,454 tons. The London market closes steady at £57 for spot and £57 13s. 9d. for futures.

Ferroalloys.—Several sales of 80 per cent. ferromanganese have been made at around \$42, Baltimore. On a desirable order it is possible that \$41.50 might be done. A fair business is going on in 50 per cent. ferrosilicon, but prices are irregular, ranging from \$59 to \$61, Pittsburgh.

Pig Lead.—The leading seller of lead booked a large tonnage at 4c., and on March 29 advanced its price to 4.10c., New York, for desilverized lead in 50-ton lots for nearby shipment. The last change in the price of lead, by this interest, was February 23, when it was reduced to 4c. Outside sellers of lead are asking higher prices, and while 4.15c. is the general quotation, there are some resale lots available at 4.10c. In St. Louis the market is exceptionally strong, at 3.97½c. to 4c.

Spelter.—A larger business has been transacted in spelter than for many weeks. Prices are slightly higher, at 4.85c. to 4.90c., New York, and 4.70c. to 4.75c., St. Louis. Brass interests in the Naugatuck Valley have bought rather more spelter of late, and the same is true of the large consumers of this metal in the iron and steel line.

Antimony.—An advance in the foreign quotation of practically £1 during the week has brought no change in New York store prices. Hallett's can be had at 7.75c., Cookson's at 8c. and other less well-known brands at 7.50c.

Tin Plate.—Business is good. Consumers are specifying freely on contracts and some new orders are being

placed. There is a suspicion, however, that not all the tin plate manufactured is going into actual consumption. The price is unchanged, at \$3.64, New York, and \$3.45, Pittsburgh, for 100-lb. IC coke plates, subject to the usual rebate of 5c.

Old Metals.—More inquiries are being received, but consumers are endeavoring to purchase cheaper. The prices of scrap are high as compared with ingot, copper and pig lead, but this is accounted for by the scarcity of scrap. Only a little is coming on the market, and much of this is purchased and retained by speculators or dealers. Dealers' selling prices are unchanged as follows:

| | Cents. |
|-------------------------------------|----------------|
| Copper, heavy cut and crucible..... | 12.25 to 12.50 |
| Copper, heavy and wire..... | 12.00 to 12.25 |
| Copper, light and bottoms..... | 11.00 to 11.25 |
| Brass, heavy..... | 9.00 to 9.25 |
| Brass, light..... | 7.00 to 7.25 |
| Heavy machine composition..... | 11.25 to 11.50 |
| Clean brass turnings..... | 8.00 to 8.25 |
| Composition turnings..... | 9.75 to 10.00 |
| Lead, heavy..... | 3.75 |
| Lead, tea..... | 3.40 |
| Zinc scrap..... | 3.62½ |

The world's production of copper in 1908, according to estimates of Aron Hirsch & Sohn, Halberstadt, Germany, was 734,545 tons of 2240 lb. In 1907 it was 702,044 tons, and in 1906 741,654 tons. The production in the United States in 1908 was, according to the same authority, 408,930 tons. A sharp decrease in the Mexican and a gain in the United States production were the chief changes in 1908.

Iron and Industrial Stocks.

NEW YORK, March 31, 1909.

The stock market has manifested extraordinary strength, in view of the generally unsatisfactory state of business. Evidently current conditions play a smaller part in security values than the expectations of better times. In some of the industrial stocks a decided upward tendency was shown, which was particularly marked in the United States Steel stocks and the equipment stocks. The range of prices on the active iron and industrial stocks from Thursday of last week to Monday of this week was as follows:

| | |
|------------------------------|------------------------------|
| Allis-Chalm., com., 13½-14½ | Railway Spr., pref. 90-100 |
| Allis-Chalm., pref. 43½-46½ | Republic, com., 19½-21½ |
| Bethlehem Steel, com., 22 | Republic, pref. 71½-73½ |
| Bethlehem Steel, pref., 50 | Sloss, com., 72-73½ |
| Can, com., 8½-8¾ | Pipe, com., 27-28½ |
| Can, pref., 74-75 | Pipe, pref., 70-72 |
| Car & Fdry, com., 48½-50½ | U. S. Steel, com., 44½-47½ |
| Car & Fdry, pref., 110½-112½ | U. S. Steel, pref., 111-112½ |
| Steel Foundries, 36-38½ | Westinghouse Elec. 79-83½ |
| Colorado Fuel, 32½-35 | Chl. Pneu. Tool., 20½-20¾ |
| General Electric, 155-158 | Cambria Steel, 34½-35½ |
| Gr. N. ore cert., 67½-68½ | Lake Sup. Corp., 18½-18¾ |
| Int. Harv., com., 68½-70 | Penna. Steel, pref., 103 |
| Int. Harv., pref., 111½-112½ | Warwick, 7½ |
| Locomotive, com., 52-54½ | Crucible St., com., 7½ |
| Locomotive, pref., 114 | Crucible St., pref., 57½-58½ |
| Pressed Steel, com., 36½-37½ | Harb.-W. R., com., 17½-17¾ |
| Pressed Steel, pref. 98-100 | Harb.-W. R., pref., 80 |
| Railway Spr., com., 36½-38½ | |

Last transactions up to 1.30 p.m. to-day are reported at the following prices: United States Steel common 40, preferred 113½, bonds 103½; Car & Foundry common 50½, preferred 111; Locomotive common 54½, preferred 114½; Colorado Fuel 36½; Pressed Steel common 39, preferred 98; Railway Spring common 39; Republic common 22½, preferred 74½; Sloss-Sheffield common 74½; Cast Iron Pipe common 28½, preferred 72; Can common 8½, preferred 75.

Chisholm & Chapman, 18 Wall street, New York, report the following quotations under date of March 30:

| | Bid. | Asked. |
|--|------|--------|
| Bethlehem Steel 1st ext. 5s, due January, 1926..... | 80½ | .. |
| Bethlehem Steel purchase money 6s, August, 1908..... | 118½ | .. |
| Buffalo Iron 5s, due October, 1925..... | 98 | 101 |
| Buffalo & Susquehanna Iron 1st 5s, June, 1932..... | .. | .. |
| Buffalo & Susquehanna Iron deb. 5s, January, 1926..... | .. | .. |
| Dominion Iron & Steel 5s, due July, 1929..... | 79 | 80½ |
| La Belle Iron Works 1st 6s, December, 1923..... | 104 | 105 |
| Lackawanna Steel 1st 5s, April, 1923..... | .. | 95 |
| Maryland Steel 1st 5s, February, 1922..... | 102½ | 103½ |
| Penn Steel 1st 5s, November, 1917..... | 101 | 103 |
| Pennsylvania & Maryland Steel 6s, September, 1925..... | 110 | 112 |
| Republic Iron & Steel 1st 5s, October, 1934..... | .. | 98½ |
| Sloss Iron & Steel 1st 6s, February, 1920..... | 104 | 107 |
| Sloss Iron & Steel consol. 4½s, April, 1918..... | 94½ | 97 |
| United States Steel Corporation. | | |
| Collateral Trust 5s, Series A, C, E, April, 1951..... | 114 | 115½ |
| Collateral Trust 5s, Series B, D, F, April, 1951..... | 114 | 115½ |
| Sinking Fund 5s, April, 1903..... | 102½ | 103 |
| Union Steel 1st 5s, December, 1952..... | 104 | 105 |
| Clairton Steel 5s, 1908-1913..... | 100 | .. |
| St. Clair Furnace 1st 5s, 1910-1939..... | 100 | .. |
| St. Clair Steel 1st 5s, 1908-1926..... | 100 | .. |
| Illinois Steel deb. 5s, January, 1910..... | 100 | .. |
| Illinois Steel 5s, April, 1913..... | 100 | .. |
| All bonds quoted "And Interest." | | |

The Jones & Laughlin Steel Company, Pittsburgh, has sold to Blair & Co., New York, and the First Trust & Savings Company, Chicago, an issue of \$15,000,000 30-year 5 per cent. bonds. The company has issued the following statement regarding this transaction: "Owing to the existing business depression money has accumulated in large amounts in the banks, and it seems a propitious time to make the issue. We

do not anticipate any large expenditures for new work at the present time, but wish to be ready when times improve to complete plans which we have decided upon." Sales of these bonds have begun to be made on the New York Curb. On Tuesday the sales totaled \$515,000 at 99 $\frac{1}{4}$ to 99 $\frac{3}{4}$.

Dividends.—The Pittsburgh Malleable Iron Company, Pittsburgh, has declared the regular quarterly dividend of 2 $\frac{1}{2}$ per cent., payable April 20.

The American Locomotive Company has declared the regular quarterly dividend of 1 $\frac{1}{4}$ per cent. on the preferred stock, payable April 21.

The Vulcan Detinning Company has declared the regular quarterly dividend of 1 $\frac{1}{4}$ per cent. on the preferred stock, payable April 20.

New York.

NEW YORK, March 31, 1909.

Pig Iron.—Sales in this district have been small and are devoid of any significance. The market is weaker and the Southern furnaces now have assumed the leadership. We quote \$16.25 to \$16.75 for No. 1 Northern foundry, \$15.75 to \$16.25 for No. 2 foundry and \$15 to \$15.50 for No. 2 plain. Alabama iron is quoted \$15.75 to \$16 for No. 1 and \$15.25 to \$15.75 for No. 2 foundry.

Steel Rails.—Among contracts reported by the leading interest in the past week are the following: 2500 tons for the Copper River & Northwestern Railroad in Alaska, 2500 tons for the Wabash; 3000 tons for the Texas Pacific, 3000 tons for the Norfolk & Western, 8400 tons of open hearth rails to be rolled at Birmingham for the Nashville, Chattanooga & St. Louis. Two sales of girder rails are reported—one of 22,000 tons for Chicago City Railways Company, made by the Lorain Steel Company, and one of 2500 tons, with the privilege of increasing to 4500 tons, made to the Pennsylvania Steel Company by the Milwaukee Electric Light, Heat & Power Company.

Structural Material.—The amount of business which the open market has developed and the exceptionally low prices at which much of it has been taken recently make the structural market a center of special interest. Railroads which had practically decided to do no bridge work this year have been induced by the low level of the market to brush up their plans and place their orders. One case of this sort is the contract of the Louisville & Nashville for 5000 tons, which has just been taken by the American Bridge Company. The same company will furnish 3000 tons for bridge work on the Carolina, Clinchfield & Gulf, and 2000 tons for a new building at Birmingham, Ala., for which Griffiths & Co. are general contractors. In New York it has taken the Best & Co. building at Fifth avenue and Thirty-fifth street, 2000 tons, and the addition to the Tiffany store on Fifth avenue, 700 tons, and will receive the fabricating contract for the new pier 53 from the McHarg-Barton Company. At San Francisco it has been awarded the Mechanics' Library contract, 800 tons, while the Milliken Brothers' receivers will fabricate the steel for the Kohler & Chase building, also in San Francisco, 500 tons. The Chicago & Northwestern will place 6000 tons in addition to its recent track elevation contract at Chicago; the Burlington road is inquiring for 2000 tons; the city of Denver is receiving bids on a viaduct, 1000 tons, and at Cleveland, Ohio, bids go in to-day on a highway bridge at Denison street, calling for 6300 tons. Among pending business is the East Boston grain elevator of the Boston & Albany, 3500 tons; the Fort Mason wharves, at San Francisco, 1500 tons; the Central National Bank building at New Orleans, 3000 tons. A large amount of business is pending and it is estimated that 100,000 tons is likely to come on the books of the fabricating companies by the middle of April. In March about 200,000 tons was figured on and probably 125,000 tons let, of which the American Bridge Company had taken 60,000 tons up to the close of last week. While the prices of fabricated material on some recent contracts point plainly to considerable concessions from 1.30c., Pittsburgh, by structural mills, the ordinary run of business in plain material continues to be done at that figure. We quote on mill shipments, tidewater deliveries, as follows: Beams, channels, angles and tees, 1.46c.; tees, 1.51c. On beams, 18 to 24 in., and angles, over 6 in., the extra is 0.10c. Structural material, cut to lengths, is sold in small lots at 1.90c. to 2c.

Bars and Plates.—Trade in these lines is quiet, orders being confined to small lots for immediate delivery. Common bar iron is quoted at 1.30c. to 1.35c., and best refined at 1.40c. to 1.50c., at tidewater. Steel bars are held at 1.36c., tidewater, with much disturbance caused by the reports emanating from Pittsburgh of lower prices. Tank and ship plates are quoted at 1.46c. to 1.56c., tidewater.

Cast Iron Pipe.—The city of Rome, N. Y., is expected to be in the market for about 4000 tons very shortly. This is the largest letting now in sight in this section. Quite a little New England inquiry is coming up, but not for important quantities, the maximum appearing to be about 200 tons. It is expected that the Tracy Commission will make a favorable report regarding the debt limit of New York

City, which will enable more bonds to be issued, in which case the high pressure extension, requiring about 30,000 tons, will be among the early new undertakings. A Philadelphia founder was awarded the Reading contract, for about 1000 tons, at \$21.96 per net ton, delivered. It is observed that quite a number of pipe makers are now less anxious to take orders at the prices which they are obliged to make. Evidently prices are close to, if not below, the cost of manufacture. Carload lots of 6-in. are quoted at \$23.50 per net ton, at tidewater.

Old Material.—The most important transaction of the week, so far as known, was the sale of 1000 tons of old car wheels at \$12. This, like numerous other recent sales of old material in this market, was for the purpose of realizing and can hardly be regarded as a fair criterion of values. Hardly any genuine demand is experienced in any line, as inquiries which are being received are usually regarded as made for the purpose of testing the market and not with the purpose of making purchases. It is likely, however, that some consumers would buy moderately if they were able to get material at the figures which they name as their price limit. It is understood that considerable quantities of scrap of different kinds are being held at consumers' works in eastern Pennsylvania on which deliveries have been refused and shippers are allowing it to stand on cars, even though subject to heavy charges for demurrage, as they have no other point to which they can send it. The scrap market appears to be in a more demoralized condition than known in many years, and yet holders generally are hopeful that a change for the better must soon be expected and are averse to making sacrifices. It is therefore to be understood that the following quotations, which are per gross ton, for New York and vicinity, are indicative of what must be accepted at sacrifice sales and that higher prices would be asked on purchases made in a regular way:

| | |
|---|------------------|
| Old girder and T rails for melting..... | \$9.00 to \$9.50 |
| Heavy melting steel scrap..... | 9.00 to 9.50 |
| Relaying rails..... | 18.00 to 19.00 |
| Old iron rails..... | 14.00 to 14.50 |
| Standard hammered iron car axles..... | 14.50 to 15.00 |
| Old steel car axles..... | 14.00 to 14.50 |
| No. 1 railroad wrought..... | 11.50 to 12.00 |
| Iron track scrap..... | 9.50 to 10.00 |
| No. 1 yard wrought, long..... | 11.00 to 11.50 |
| No. 1 yard wrought, short..... | 9.50 to 10.00 |
| Light iron..... | 6.00 to 6.50 |
| Cast borings..... | 5.00 to 5.50 |
| Wrought turnings..... | 6.00 to 6.50 |
| Wrought pipe..... | 8.00 to 9.00 |
| Old car wheels..... | 13.00 to 13.50 |
| No. 1 heavy cast, broken up..... | 11.00 to 11.50 |
| Stove plate..... | 9.50 to 10.00 |
| Locomotive grate bars..... | 9.50 to 10.00 |
| Malleable cast..... | 10.50 to 11.00 |

The Alaska-Yukon-Pacific Exposition, Seattle, Wash., was announced as 90 per cent. complete March 1. This is claimed to assure that it will be ready for the opening day, June 1. The exhibits thus far arranged for are of the most comprehensive character.

The proposal was seriously made recently in the German Reichstag that the government build an open hearth steel plant in order to supply steel to the small rolling mills, and thus make them independent of the exactions of the Steel Syndicate.

The Pressed Steel Car Company is now turning out from 35 to 40 steel cars per day at its McKees Rocks plant, Pittsburgh. Its Woods Run car plant is still idle and will remain so until there is an improvement in the demand for steel cars.

Another transcontinental railroad was completed March 29, when the last spike was driven in the track of the Chicago, Milwaukee & Puget Sound, which is the Pacific Coast extension of the Chicago, Milwaukee & St. Paul. The extension is 2436 miles long.

The blast furnace of the Youngstown Steel Company, Youngstown, Ohio, which has been idle for some time undergoing repairs and improvements, was started up March 23.

The Gayley dry blast installation at the Toledo Furnace Company, Toledo, Ohio, is approaching completion and will probably be started early in April.

The Upson Nut Company has under consideration the erection of an ore handling plant adjoining its blast furnace in Cleveland, Ohio. The company is securing proposals for the erection of a two bridge plant in accordance with its own plans.

The Machinery Trade.

NEW YORK, March 31, 1909.

Business with machinery houses has increased somewhat and there is a more distinct upward tendency to trade, due to the renewed activity of some of the important projects which have been held in abeyance for some time and the greater amount of shop construction announced to go forward shortly. Of the new building operations many will require large installations of mechanical equipment. The volume of actual transactions closed the past week was only slightly larger than that of the previous few weeks, but the number and character of inquiries received were very encouraging. Inquiries covering several tools were more numerous, though no large lists were reported. The demand was almost exclusively from the industrial plants, the railroads having not yet come into the market to any extent. While business shows some betterment and there are indications of a gradual increase in trade, it is thought that the railroads will have to abandon their policy of retrenchment and come into the market more freely before it shall become normal. The two large lists issued early in the year have not yet been closed, according to houses in this territory, and it is understood that the proposed shops for Green Island, N. Y., will not be built for some time. Catalogues and other data concerning equipment for these shops were secured by the road a month or two ago. The statement that the Long Island Railroad is to purchase 120 steel motor cars for passenger travel afforded some encouragement.

The great demand for ice making equipment has taxed the average manufacturers of that class of machinery to their utmost capacity, and they are now looking about them with a view to making extensions to meet the new conditions which confront them. In consequence there have been a number of inquiries of late for machinery from makers of ice and refrigerating machinery. Another class of trade that has been helped by the influx of orders to the ice machinery men are the manufacturers of castings, some of whom have been enabled to make advantageous contracts for furnishing parts.

There are more encouraging reports from manufacturers of mining machinery, some rather large inquiries having been recorded from the gold and silver mining districts in this country and some very good business has been placed of late in Mexico. The Pennsylvania coal fields have been calling for some equipment, but this is chiefly in the line of machinery for coal breakers and storage plants, where the usual spring repairing and reconstruction work is going on.

It is a significant fact that notwithstanding general business has suffered something of a depression of late, the automobile industries in this country have been growing steadily and in consequence makers of machine tools and the trade in general have benefited largely. Automobile people explain this by stating that proportionately less foreign automobiles are sold here, as it has been conceded that machines of American manufacture are equal to those produced abroad. Some machinery houses who specialized in bicycle making equipment years ago and whose business fell off greatly because of the decline in bicycle trade have been getting out old patterns and making machinery for turning out parts of automobiles. They have found that considerable of their equipment which was formerly in demand for bicycle work is especially adaptable for certain branches of the automobile manufacture.

Du Pont Powder Company's Cartridge Plant.

The E. I. du Pont de Nemours Powder Company, Wilmington, Del., is now getting bids on machinery with a view to carrying out its plans, mentioned in these columns before, of manufacturing cartridges, and while no list of any magnitude is now out in the trade, it is understood that a number of manufacturers and dealers have been figuring on machinery equipment. From all accounts the company's scheme, which has been under way for several months, is coming to a head, and, according to its original plans, if they are carried out, it will spend something like between \$70,000 and \$80,000 for machinery. It is known in the trade that makers of special machinery designed for the manufacture of cartridges have been offering estimates for some time covering machinery equipment to cost in the neighborhood of \$25,000, and the machine tool list and power requirements will, it is said, bring the total expenditure of the company up to the larger amount mentioned above. Intimation has been given to some of the bidders that it is the desire of the company to make purchases shortly, so it is highly probable that it will not be long before the business will be placed.

The American Locomotive Company is planning to build a large boiler shop at its Brooks plant, at Dunkirk, N. Y., which may equal in size the present foundry there. The foundry is approximately 175 ft. in width and 650 ft. long

and it is thought that plans will result in the boiler works being a companion building. This plant is for the future needs of the company and it may be several months before the plans are completed, as the manufacturing department of the company is not crowded at present, so it will be, perhaps, a year before the machinery requirements come before the trade. The company has not as yet decided just how large its proposed plant at Gary, Ind., will be, but plans are now being worked out, but in a desultory way, so the details will not be available in the immediate future.

B. F. Avery & Sons, Louisville, Ky., have definitely decided to build their proposed new plow factory and are now perfecting plans for an up to date plant which they hope will be completed so that it will not be many weeks before they will be ready to receive bids for the work. George M. Brill, Marquette Building, Chicago, Ill., is engineer in charge.

The purchasing department of the Maxwell-Briscoe Motor Company, Tarrytown, N. Y., is finishing up the buying details of one of the largest lists placed before the trade in this territory during the year. Specifications sent before the trade two weeks ago for machinery equipment, aggregating something like \$25,000 in value, was the final machine tool list arranged to fill the company's 1910 production schedule. The entire buying during the summer by this company when the orders for the last list are placed will aggregate about \$80,000. A great deal of this machinery was sent to the New Castle, Ind., plant, while some of it was installed in the Schenectady plant; the rest, and principally the machinery on which the trade is now bidding, will be put in the new Tarrytown plant of the company, which was recently acquired from the Ingersoll-Rand Company. Some manufacturing is already being done in this plant by the Maxwell-Briscoe Company to relieve congested conditions at its original large plant, and while it is understood that the machinery now being purchased for the Tarrytown plant will leave ample space for additional manufacturing equipment there, it is understood that the present year will not see any further extensions on a large scale. There may be some supplementary buying during the summer in the way of special equipment or machine tools to supply certain urgent needs. The company's purchasing department is now busy handling bids on the extensive list of material and supplies which were advertised in *The Iron Age* of March 18.

A great deal of new machinery will be purchased within the next two or three months by the Nelson Valve Company, Chestnut Hill, Philadelphia, Pa., which is to erect a new plant to consist of 10 buildings of reinforced concrete construction with steel sash, cement floors and tile roofing. The buildings will be modern throughout and fireproof. The boiler house is in course of construction, and new Babcock & Wilcox boilers, a 25,000-gal. steel tank and tower have been installed. The other buildings covered by the plans are a brass foundry, 48 x 256 ft.; brass machine shop, 48 x 256 ft.; iron machine shop, 48 x 176 ft.; storage and office building, 48 x 216 ft.; assembling room, 64 x 90 ft.; pattern shop, 48 x 48 ft.; pattern storage vault, 48 x 80 ft.; addition to iron foundry, 50 x 64 ft., and chemical and testing laboratory, 32 x 35 ft.

Purchases of additional contractor's equipment, consisting of air compressors, electric motors, drills, tunneling machines, pumps, hoisting engine, derricks, concrete mixer, rock crushers, orange peel and clam shell buckets, sand scows, gasoline towboat, machine and blacksmith shop tools, &c., will shortly be made by Frank B. Gilbreth, 34 West Twenty-sixth street, New York, for constructing the hydro-electric plant on the St. Johns River, at Grand Falls, New Brunswick, for the Grand Falls Power Company. This equipment is to be purchased for the contractor's plant only, the hydro-electric machinery for the permanent plant equipment of the main power plant will not be purchased by Mr. Gilbreth, who has the contract for only the construction work involved in the development. John B. McRae of Ottawa, Canada, is the chief engineer, and Ralph Mershon of New York is electrical engineer. Two carloads of contractor's equipment have arrived at the site, and the work of sinking the main shaft at the upper end of the tunnel has commenced. Over \$5,000,000 is to be expended in the development of the hydro-electric plant at Grand Falls, which is situated on the Canadian Pacific Railroad, about 200 miles north of St. John and about 2 miles east of the State of Maine. The plant will generate about 100,000 hp. in electric current, which will be distributed to various cities throughout New Brunswick and Maine. It will be equipped with the most improved hydraulic and electrical machinery for high potential and long distance transmission. The work involves among other features the construction of a number of shafts in rock excavation, 130 ft. deep; a power chamber, 30 x 260 ft. and 130 ft. deep; a tail race, 28 ft. in diameter and 2400 ft. long, and power house, 260 x 350 ft. The intake shafts will be nine in number and 12 ft. in diameter and 130 ft. deep. The total head developed will be 135 ft., and a number of auxiliary works, substations and long distance transmission lines will be erected.

The Canadian Pacific Railroad contemplates the erection of large shop buildings at Westminster Junction, about 20 miles from Vancouver, to be the nucleus of a plant that may

be ultimately devoted to the building of locomotives. The company has not yet prepared plans for the new buildings, but will start work as soon as it is definitely decided to erect the plant.

The Maurice River Light, Heat & Power Company, Vineland, N. J., has been incorporated with a capital stock of \$100,000 to develop a hydro-electric plant on the Maurice River, to furnish light and power for Vineland and surrounding towns. E. C. Potter of Vineland is interested.

The Advisory Board of Consulting Engineers at Albany, N. Y., has approved two barge canal contracts involving an expenditure of about \$5,000,000. The contracts covered are No. 23, providing for the construction of the land line from Kingsbend to Pittsford and to the Genesee River at Rochester, about five miles, and No. 30, providing for the construction of the river and land line, locks and other improvements from Little Falls to Sterling Creek, about 14 miles.

The New York & New England Cement & Lime Company, which is building a 6000 bbl. Portland cement plant at Hudson, N. Y., has purchased a large portion of the machinery for the plant and will buy the balance as quickly as possible. The company will be glad to receive any propositions presented to it and preserves all catalogues which it receives. H. J. Seaman, Northampton, Pa., is general superintendent.

The W. P. Pressinger Company has been organized by W. P. Pressinger, who recently resigned as general manager of the compressor department of the Chicago Pneumatic Tool Company. The new company will handle the vacuum cleaning machines made by the Keller Mfg. Company of Philadelphia, Pa., and formerly sold by the Chicago Pneumatic Tool Company. Offices and salesrooms have been opened at 1 West Thirty-fourth street, New York, and local agencies will be established at all distributing points throughout the Eastern territory. The devices handled by the company range in capacity from a portable cleaner operated from an electric lamp socket to the largest stationary installation of any sweeping capacity desired.

Business Changes.

To meet the growing demand for Komo steam traps the manufacturing and sales facilities are to be increased. The business, formerly carried on by P. A. Moulton, as sales agent for the Komo steam trap, at 92 Liberty street, will hereafter be transacted by the Linton Machine Company, 26 Cortlandt street, New York, which is ready to furnish these traps in any desired quantity.

New England Machinery Market.

BOSTON, MASS., March 30, 1909.

The business booked in March showed a decided increase over February with most of the dealers, the gain being chiefly because the previous month was so utterly miserable in its totals. Some business was placed last week, but the market is especially noteworthy because of the volume of business which is being deferred by customers. There is something almost menacing from the standpoint of buyers in the totals of known lists, orders for which will be placed as soon as conditions get a little more settled. Add to this business that which is projected, but of which nothing has been heard, and that which will arise with an improved market, and it will not take long to clean the market of all available stocks of some types of machines. Certain tools are already scarce. Milling machines are the best example of this, some sizes of standard makes being impossible to obtain for quick delivery. It would not take many weeks of good business to put deliveries in a bad way. Some customers realize this and are taking no chances with the future. They have a vivid recollection of the difficulties and disappointments of two years ago, when the want of a few machines meant the sacrifice of large profits. But the dealers do not make much impression upon the majority of their trade when they take this line of argument. It is difficult to overcome the shrinking from going ahead. As to prices it is evident that the meeting of the machine tool builders had a stiffening effect, for no complaint of price cutting of standard lines is heard.

Edwin J. Blake, Hartford, Conn., manufacturer of brass castings, will erect a new foundry building, about 100 x 100 ft. and one story. When the building is completed Mr. Blake will employ about 200 hands.

The Dwight Slate Machine Company, Hartford, Conn., has been placed in the hands of Leslie Moulthrop as receiver. The company manufactures sensitive drills, automatic gear cutters, marking machines, &c., and has been established 25 years. The receiver is advertising the business for sale, in the hope that it may be continued as a going concern.

The Phillips Insulated Wire Company, Pawtucket, R. I.,

manufacturer of bare and insulated wire, states that nothing definite has been decided concerning reported large additions to its plant.

The D. M. Dillon Boiler Works, Fitchburg, Mass., whose works were damaged by fire recently, are receiving bids for some \$6000 worth of hydraulic machinery for riveting and handling boilers, replacing equipment which was ruined by the fire. The principle items in the list are a 10-ft. gap riveter and a 20-ton hydraulic crane.

The Royal Typewriter Company, Hartford, Conn., is planning an addition to its factory.

The business of Hawkridge Bros., 303 Congress street, Boston, Mass., steel merchants, has been incorporated as the Hawkridge Bros. Company, with a capital of \$300,000. Edwin Hawkridge is the president and John F. Hawkridge, treasurer. The business has been conducted as a partnership for 25 years. The company will continue the agency for the Halcomb Steel Company, Syracuse, N. Y., at the same location.

The Metropolitan Water Board, which has control of the water system of Boston and the metropolitan district of which that city is the center, is planning to establish a hydro-electric plant at Clinton, Mass., to utilize the power of the Wachusett reservoir, a project that has been under contemplation for years. The Water Board has \$115,000 for the purpose, under an appropriation made at the last session of the Massachusetts Legislature, and the only reason for delay is negotiation between the board and the town of Clinton as to taxation of the proposed power station. About 2500 hp. is at present available, utilizing the daily flow of water from the reservoir to the aqueduct, which starts it on the way to Boston, 40 miles distant. The daily flow is about 140,000,000 gal., with a powerful head, and the amount will be increased eventually with the construction of additional reservoirs, extending the chain of lakes by the utilization of other and even larger water sheds of central Massachusetts. The aqueduct has a maximum capacity of 300,000,000 gal. per diem. It is proposed to dispose of the power generated for industrial purposes.

The Connecticut River Power Company is completing its great hydraulic development of the Connecticut River between Vernon, Vt., and Hinsdale, N. H. The dam, holding back the river where it is 900 ft. wide, and the power plant, are practically completed. The water wheel capacity of the power house is 20,000 hp., of which it is expected to develop 15,000 for distribution through electric transmission. Contracts are already being placed for the power, some of them in cities and towns many miles from the plant. There will be a good market for equipment which will be needed by customers of the company.

The Consolidation Coal Company, Baltimore, Md., has purchased the property of the Portsmouth Coal Company, Portsmouth, N. H., including a third of a mile of waterfront, and, according to the statement made in that city, proposes to establish an extensive coal handling plant there. Increased equipment for handling coal will be required, and coal pockets and an extension of railroad tracks will have to be built. The report is that the company will make Portsmouth its distributing point for New England and Canada.

The New York, Boston & Cape Cod Canal Company has awarded the contract for building the waterway connecting Buzzard's Bay with Massachusetts Bay to the Maryland Dredging Company, Baltimore, Md., the contract price being stated at between \$5,000,000 and \$6,000,000. Work will begin May 1, according to the dispatches. The initial work was done last season.

The Biggins-Rodgers Company, Wallingford, Conn., manufacturers of silverware, has increased its capital stock from \$25,000 to \$50,000, the purpose being to enlarge the business by manufacturing other lines than plated hollowware.

The McCue Company, Hartford, Conn., manufacturer of automobile and carriage hardware, has increased its capital stock from \$50,000 to \$150,000, the new money being intended for extensions of the business, including, it is understood, enlargement of manufacturing facilities.

The machine shop of the Wright Wire Company, Worcester, Mass., which was recently damaged by fire, was more seriously affected than at first supposed. It had been believed that most of the machinery would be saved, but this is very doubtful. Probably some of the tools will have to be replaced, though nothing definite can be said in this connection until the insurance is adjusted and the work of clearing up the ruins has been completed. The building will be replaced as soon as possible. The company builds its own machinery.

Among the New England concerns engaged in general manufacturing which propose to extend their works this season are the Dartmouth and Bristol Mills, New Bedford, Mass., textile manufacturers, which will erect two new buildings, one 100 x 350 ft. and two stories; the other 100 x 400 ft. and three stories. The Tamarack Company, Pawtucket, R. I., textiles, will build a new mill 150 x 197 ft., two stories. The Glendale Elastic Fabric Company, Easthampton, Mass., has made tentative plans for large additions to its plant. A. J. Bates & Co., Webster, Mass., are planning a new shoe shop, 40 x 250 ft. and four stories.

Chicago Machinery Market.

CHICAGO, ILL., March 30, 1909.

Beyond some little quickening observed here and there in various quarters of the machinery market, trade has not sensibly improved. On the other hand, the existing dullness is apparently not becoming more accentuated, and, taken as a whole, it is a question perhaps if the tendency is not rather to overemphasize the adverse features of the present situation. True, there is no heavy buying of equipment in any line, yet the pick-up orders from here and there, which for months have been the mainstay of the market, are still coming out, scattered and in small lots, of course, but in the same manner and at about the same rate as for some time. Among the tools moved last week by local dealers were several good sized Landis grinders, one a 10-ft. machine. Aside from equipments for two or three fair sized manufacturing plants, there are no important machine tool specifications being figured on. There is very little coming from the railroads, nor is there anything large in immediate prospect from this source. The implement makers and automobile builders continue in the lead, as they have been for months past, as purchasers of machine tools, but their position denotes only relative activity. Second-hand tools are coming on to the market more freely, several lots, some of fair importance, having recently been included in sales of complete shop equipment purchased by dealers and others.

Contracts have been let by the Toledo Machine & Tool Company, Toledo, Ohio, for an addition to its main shop, 100 x 150 ft., three stories. The new building will be of mill construction; the floor of the shop, however, will be of concrete 10 in. thick. For the equipment of this extension there will be required a number of large tools, the specifications calling for 60-in. lathes, 8-ft. boring mills and gear cutters, 30-in. slotters, &c. Besides these there will be installed additional cranes, and an additional crane runway will be provided, so that the total crane service will extend over 300 ft. in length, covering a span 40 ft. in width. The company reports a marked increase in its business during the last six months. Within the past week shipments have been made East and West to both coasts, to Louisiana and to Berlin, Germany.

The erection of a foundry 80 x 300 ft. is contemplated by the La Crosse Plow Company, La Crosse, Wis., the coming summer. The building will be equipped with modern machinery and appliances, the details of which have not yet been worked out.

The Streater Clay Mfg. Company, Streator, Ill., is arranging to construct a new brick plant building which will double its present floor space. Some of the equipment, including pans, presses, elevators, bins and screens, has already been purchased from the Stevenson Company, Wellsville, Ohio, but the company is now in the market for a Corliss engine of about 400 hp.

The Janesville Machine Company, Janesville, Wis., is preparing to enlarge its implement factory by the addition of a four-story and basement warehouse, 90 x 120 ft., which will be equipped with elevators, air hoists and a complete trolley system in connection. This building will be connected with the present warehouse by a two-story steel runway across River street. To enlarge its power equipment there will also be installed a 100-kw. 250-volt direct connected generator. The company states that this has been one of the most prosperous years in its history.

The entire equipment of the shops of the Pittsburgh Steel Construction Company, located at Economy, Pa., the offices of the concern being in the Lewis Building, Pittsburgh, Pa., has been purchased by Joseph T. Ryerson & Son, Chicago, for resale. It is understood that the Pittsburgh Steel Construction Company will engage in the manufacture of another line of steel products.

The Reiter Boiler Cleaner Company, Elgin, Ill., has been incorporated with a capital stock of \$25,000 for the manufacture of a mechanical boiler cleaner. The business is in charge of E. H. Reiter, patentee.

Burns & McDonnell, Scarritt Building, Kansas City, Mo., have completed plans for the construction of an electric light plant and water works system at Portales, N. M., which, it is estimated, will cost about \$50,000.

It is stated by H. E. Chubbuck, general manager of the Illinois Traction System, whose office is at Peoria, Ill., that about \$200,000 will be expended for the reconstruction of gas plants at Danville, Decatur and Springfield.

The California Saw Works, San Francisco, Cal., has plans prepared for the construction of two new buildings, each 22 x 140 ft., two stories, with a 20-ft. driveway between the structures. The buildings will be erected on the property where the company is now located in temporary structures, and when ready to equip the new buildings, one of which will be used as a machine shop and the other as a saw factory, it will be in the market for lathes, planers and

drill presses. The company has not yet decided just how much new machinery it will have to purchase.

Cincinnati Machinery Market.

CINCINNATI, OHIO, March 30, 1909.

Slowly but none the less surely the dealers are taking on courage and machine tool manufacturers are filling some orders for the stock floors, which have been pretty well depleted during the months of depression. The business is not what was expected, to be sure, but the majority of tool makers in this territory are reasonably satisfied with March orders and prospects. Lathes seem to have taken the lead, with drills, drill presses and milling machines a close second. The anxiety of the bidders on the machine tool lists issued by the railroads some time ago has increased, pending delayed announcements of awards, which are now promised for early April.

Work in the new Oakley factory colony, to which reference has been made in this correspondence from time to time, is progressing rapidly, and three or four of the half-dozen large establishments which will make it their future home are counting on getting moved and in going shape about the first of the year. The Cincinnati Planer Company let a contract last week for a second building, 140 x 200 ft., and it hopes to be in its new home by September 1. In addition to the two main buildings of the size mentioned, the company's plant will include an office building, 500 ft. square and two stories in height; a stock building, 30 x 60 ft., and another the same size to be used for locker rooms, &c. The second floor of the office building will be utilized for a drafting room, the preparation of patterns, &c. The plant will represent an expenditure of between \$400,000 and \$500,000, and the combined plants of the several concerns which will make Oakley their future home will cover 103 acres.

Considerable speculation is rife among machine tool builders, and those of the Camp Washington District particularly, over the announcement by Contractor Frank Folz of this city that he has secured the large tract of land on Spring Grove avenue in the bend just south of Hopple street for an Eastern manufacturer of machine tools, who will build on it a \$200,000 plant. Mr. Folz says that negotiations for the tract, which has a frontage of 288 ft. on Spring Grove avenue, have been in progress for a year, the delay in securing the property being due to the difficulty in clearing the title. Considerable grading has to be done on the site, which will be finished in five or six months. The company securing the site has guarded its negotiations well, and no hint of its identity has been vouchsafed by the Eastern agent through whom all details have been handled.

The Tool Steel Gear & Pinion Company has been incorporated at \$300,000 to take over the business of the Cincinnati Tool Steel Motor, Gear & Pinion Company, which had a capitalization of \$200,000. New stock will be issued, of which there will be \$100,000 common, \$100,000 6 per cent. first preferred and \$100,000 6 per cent. second preferred. The old plant at Carthage will be enlarged and some additional machinery installed. O. J. Carpenter is president.

The Phillemac Rolling Mill Company has increased its capital stock from \$40,000 to \$75,000. The company has been rolling iron bars and officials announce themselves quite pleased at their success since establishing their business in the old plant of the Brackett Bridge Company at Glendale. A number of improvements are contemplated. Nelson B. Cramer is the president.

The various committees having in charge the coming conventions of the National Foundrymen and subsidiary interests are completing details for the meetings, to be held in Cincinnati May 17 to 22. Reports of the sub-committees made to Chairman James A. Green of the local Committee of Arrangements showed that between 3000 and 4000 delegates may be expected to attend and that the various allied interests are taking a deep interest in the coming meetings. The entire south wing of Music Hall will be used by the displaying interests, and an additional structure will be built adjoining on the banks of the canal. Secretary C. E. Hoyt of the Foundrymen's National Supply Association is expected in the city this week, and will spend several days here looking after the details of the exhibition.

Directors of the Ft. Wayne Refrigerator Company, Ft. Wayne, Ind., were confronted at the recent annual meeting with the unique situation of having to provide immediate facilities for taking care of a flood of business. The directors closed a contract for a lease on the large shop building formerly occupied by the Wallace-Lindesmith Hoist Company. Work of moving to the new plant was begun at once. The capacity will now be doubled. Secretary A. H. Schaff has been in the East purchasing machinery, among which was a 14-ton cutting machine for stamping out the parts used in the construction of the refrigerators. An electro-galvanizing plant and a nickel plating department are to be features of the new plant.

A large power house and several important repairs were features of the work recently started and now nearing com-

pletion of the plant of the Mark Mfg. Company in Zanesville, Ohio.

The Zanesville plant of the American Rolling Mill Company started up about the middle of March, and is running with limited force on the usual day and night shift.

The Schreiber Bros. Roofing Company has been incorporated in Zanesville, Ohio, with a capital stock of \$10,000, which will eventually be considerably increased as the business expands. The incorporators are Frank and Carl Schreiber, A. L. Rea, Frank Scheffler and John Greiner.

The Columbus (Ohio) Malleable Castings Company has increased its capital stock from \$250,000 to \$300,000.

The Houghton Elevator & Machine Company, Toledo, Ohio, secured the contract for elevators for the new addition under way at the plant of the Burroughs Adding Machine Company in Detroit.

The Wayne Machine Company is the name of a new establishment recently organized in Wooster, Ohio, to manufacture a newly patented dish washing machine, which is said to have taken well on the market.

The Young-Gray Company, Toledo, is a new organization, with a capital stock of \$25,000, to install steam, electrical and hydraulic air refrigerator heating and drying machinery.

Milwaukee Machinery Market.

MILWAUKEE, WIS., March 30, 1909.

The tariff has become more of a disturbing element here than at any time within the past few months. Since the schedules of the Payne bill were announced, and particularly during the past week, there has been a perceptible slackening in orders, although inquiries continue large. In many quarters a general undercurrent of uneasiness manifests itself, and while confidence in the future is strongly felt, a complete restoration of normal conditions does not seem to be quite as imminent as it has hitherto appeared.

Apparatus for the generation, transmission, application and control of electric power shows the greatest activity, and sales of pumping machinery are also large, as the extremely low prices now current offer substantial inducements to municipalities, water companies and large industrial plants to contract at this time for extensions or replacements long contemplated. The same is true of rock crushing equipments for the production of ballast, macadam and concrete material. Mines, ore mills and smelters are also buying to a constantly increasing extent. It is in the line of machinery, of various kinds, used in factories, mills and metal working establishments, other than foundries, that purchases now being made do not fulfill recent expectations, although until lately material progress was generally reported. For foundry equipments the demand holds good.

Construction work of all kinds in practically every part of the State takes on greater activity from one week to another, and contractors are increasing their forces at a rapid rate. The following projects are now being started:

The Chicago, Milwaukee & St. Paul Railroad, according to reports received here, is planning to double the capacity of its Iowa & Dakota Division roundhouse at Mason City, Iowa, and install additional repair equipment.

The Racine Machinery Mfg. Company, Racine, Wis., is said to contemplate additional improvements to its plant. It is stated, although without confirmation, that plans have been drawn for two new four-story factory buildings and a warehouse.

The power plant of the Willow River Mfg. & Lumber Company, New Richmond, Wis., is to be considerably enlarged before fall, although nothing definite has as yet been given out concerning new equipment.

Work has been started on the new mill of Luther Lindauer, at Little Rapids, near Kaukauna, Wis., for which steel and concrete construction is to be used throughout. Twenty impulse wheels will be used to furnish power, probably through direct connection to machines and shafting.

A machine shop is being added to the property of the Kennedy Mining Company, Hazel Green, Wis., and some additional equipment will probably be needed. The company's offices are at Mineral Point, Wis.

A. W. McLimont, the new general manager of the Chicago & Milwaukee Electric Railroad, states that improvements will soon be entered upon, including increased equipment for the power station at Highland, Ill.

A Foos gas engine and Westinghouse generator will be installed by the Bellevue, Iowa, city lighting plant, and some auxiliary apparatus is to be purchased later.

The Wisconsin Carriage Company, Janesville, contemplates building a large addition to its plant if permission can be obtained from the City Council to erect an overhead tramway system connecting the new building with the old. Should this project be carried through new equipment in considerable variety will be required.

The Automatic Cradle Company will erect a three-story addition to its factory at Stevens Point, Wis., and install additional machinery.

The Homestake Mining Company, Lead, S. D., which purchased nearly the entire equipment of its famous mills from Milwaukee manufacturers, is planning to develop power from a hydro-electric plant on Spearfish Creek. The horsepower of the units to be installed has not yet been determined upon.

Contracts for large triple expansion pumping engines have been taken by the Allis-Chalmers Company, Milwaukee, from Grand Rapids and Kansas City, the latter being for the Turkey Creek pumping station.

Two Brown Hoisting Machinery Company's bridges, 290 ft. long and 40 ft. in the clear, with 1½-ton clam shells, will be installed on the new Barkhausen dock, in Green Bay, Wis.

The Platt Iron Works, Dayton, Ohio, has secured the contract for a pumping engine for Tulsa, Okla. Some auxiliary apparatus will be ordered later.

An unloading device for blowing engines was recently patented by James Tribe, Milwaukee.

The Federal Metal Weather Strip Company, Milwaukee, has been incorporated with a capital stock of \$15,000, by Chas. A. Blohm and others.

The Bucyrus Company, South Milwaukee, Wis., is building a 10-yard dipper dredge for the Geo. H. Breyman Bros. Company, to be used in deepening Boston harbor.

The statement recently made in *The Iron Age* concerning expanding trade in the Northwest is strikingly confirmed in a letter received by a Milwaukee house from the Broderick & Bascom Rope Company, St. Louis, in which it is said, "Agents on the Pacific Coast, especially at Portland and Seattle, find business good, with bright prospects for early resumption of operations in full blast, and they are calling upon us to increase the capacity of our Pacific Coast plant. We recently established a branch house at San Francisco, which reports prospects very bright. For probably two weeks during the latter part of February and the first part of March business lagged somewhat, but it now shows marked improvement, and our factories are rushed at present. Altogether, we regard conditions as most favorable."

J. F. M. Patitz, Milwaukee, has been granted patent on a new type of steam turbine for exciter units.

The city of Dowagiac, Mich., has decided to employ an engineer to prepare plans for a new water works system, the pumping plant to be operated by a producer gas engine.

The Fond du Lac (Wis.) Pressed Brick Company is making improvements and will install some additional equipment.

The Industrial Works, manufacturer of locomotive cranes at Bay City, Mich., has purchased a low pressure Parsons turbine of 375 kw. capacity to take the exhaust from a Corliss engine.

Four hydraulic turbines are to be added to the plant of the Red Cedar Valley Electric Company, Rice Lake, Wis., which will construct a dam and new power house.

Cleveland Machinery Market.

CLEVELAND, OHIO, March 30, 1909.

Local machine tool dealers report no change in the condition of the market. Some business is being done, but orders are mostly for single tools in small sizes. There is considerable business pending, but a large share of the prospective purchasers are holding off for some reason or other. The outlook for an improvement in the demand for shop equipment for new industrial enterprises a little later in the season is quite encouraging, as a number of new projects are being developed in this territory. These, when carried out, will necessitate the purchase of machinery equipment for small plants.

Conditions remain about stationary with the local machine tool builders, although whatever change there is in the way of an improvement. Makers of automatic machines report a satisfactory increase in orders. While these orders are mostly small, they are coming from manufacturers of all kinds of products who use automatic machines. The demand for ice making machinery continues very good, a large number of small plants being under contract and others being projected in this territory. Makers of pneumatic tools have not yet felt the effects of the increased activity on structural lines and report the demand for their products light. The products of a large number of local plants are, in part or in whole, automobile parts, and the majority of these manufacturers have all the work they can do and some are working overtime to fill orders. There is some improvement in the demand for elevating and conveying machinery.

In the foundry trade makers of light gray castings are fairly busy, but the situation with foundries making heavy iron castings continues unsatisfactory, orders showing no improvement.

The Cleveland Automatic Machine Company, Cleveland, Ohio, reports an improvement in orders, the number of machines sold during the past two months being larger than

during the previous five months. Inquiries are holding up well, so that the company is confident of a further improvement in its business. While no large orders are coming in, sales being limited to four or five machines or less, the company is getting orders from many kinds of industrial plants located all over the country. The company recently increased its working force by 75 men, and further additions are being made.

The Cleveland Worsted Mills Company will erect an addition to its power plant, work on which will be started soon. The company is in the market for a 1500-kw. alternating current generator, direct connected to a Corliss engine. George S. Rider & Co., Century Building, Cleveland, are the engineers.

The C. O. Bartlett & Snow Company, Cleveland, has received an order for the conveying and elevating machinery for a large cement plant to be erected at Salt Lake City by the Three Forks Portland Cement Company, for which the F. L. Smidth Company, New York, is engineer. Among other orders recently received is one from the Grassella Chemical Company, Cleveland, for conveying and elevating machinery; Monoingahela Melting Company, Pittsburgh, steam dryers, and Pittsburgh-Belmont Coal Company, Green self-dumping car haul for its plant at Byesville, Ohio. The company is now installing the machinery for garbage disposal plants in Syracuse, N. Y., and Columbus, Ohio.

Owing to the mild winter in all parts of the country, the demand for ice making machinery which set in a few weeks ago is keeping up and a large number of small plants are being built. The Cleveland Ice Machine Company reports that it has orders for 35 ice making plants for delivery within the next 60 days, ranging in capacity from 5 to 65 tons.

The Power & Illuminating Engineering Company, Alliance, Ohio, has been incorporated, with a capitalization of \$25,000, by H. H. Hosford, Grant Snyder, J. H. Forbush, A. L. Rechert and Allen Kirkbridge.

The J. D. Smith Foundry Supply Company, Cleveland, has increased its capital stock from \$50,000 to \$100,000. The increase is to provide for an extension of the company's business. No additions to the plant are contemplated.

The American Roll & Foundry Company, Canton, Ohio, maker of rolling mill machinery, reports an improvement in orders. The company is now running its plant on double turn, with 85 per cent. of its usual force.

The Vlehek Tool Mfg. Company, 8017 Central avenue, Cleveland, is building a new plant on Quincy avenue to take the place of the one that was recently destroyed by fire. The company expects to be in the market soon for drop hammers, trip hammers and some other tools. It has a large list of products, but makes a specialty of automobile kits and wrenches.

The Auto-Bug Company, Norwalk, Ohio, has been incorporated, with a capitalization of \$100,000, to establish and operate a plant for the manufacture of automobiles. The incorporators are A. E. Skadden, W. G. Gilger, J. W. Goddell, C. F. Jackson and J. N. McKnight.

The Traction Well Cleaning & Pulling Machine Company is being organized in Findlay, Ohio, to manufacture a new machine for pulling rods and tubing from oil wells. The machine was invented by L. W. Fetzer and O. D. Kraft, who are prime movers in the new company. It is the intention to establish a manufacturing plant.

The village of Medina, Ohio, will soon be in the market for a new pump and engine for the municipal water works pumping station.

The Jewel Motor Car Company, Massillon, Ohio, has let the contract for the erection of an addition to its plant.

The general offices of the Whitman & Barnes Mfg. Company, maker of wrenches and other products, will be moved August 1 from Chicago, Ill., to Akron, Ohio, where one of the company's plants is located. There will be no change in the management. The offices were formerly located in Akron, being moved from there a few years ago.

Philadelphia Machinery Market.

PHILADELPHIA, PA., March 30, 1909.

The demand for machinery and tools continues irregular. No improvement in the volume of business is to be noted. What few orders come out are small, buyers placing business only when tools are actually needed, either for replacement or for special work in hand. The most active buyers have been the automobile makers, several small lots of tools for use in such plants having recently been sold by local merchants. In the general line of machine tools, milling machines appear to be the most active, more sales of tools of that class having been made in the past few months than in any other line. The demand for the larger class of tools continues irregular, the bulk of the business transacted being confined to those of the medium and smaller types.

It is yet too early to compare the volume of business transacted in March with that of the previous month. From present indications it will vary considerably in different

lines; with some an increase will, no doubt, be found, but with others a recession will be shown. New inquiries come out sparingly, and such as have developed are largely for individual tools. Nothing in the way of extended plant equipment has come before the trade, business of that character being held up awaiting more active general conditions.

Manufacturers of machine tools report an irregular run of business. Some few orders have been taken for special tools, but the demand in this immediate territory is small. Production is maintained at from 40 to 60 per cent., but the larger shops find it difficult to get above that basis.

The export trade has been light, particularly in standard tools. In the smaller specialties manufacturers report a good run of orders, which are individually small, but make a fair volume of business in the aggregate.

Little change is to be noted in the second-hand machinery market. Sales are of an irregular character and confined to equipment of the small and medium class. In the engine and boiler trade a fair volume of business continues to be transacted. Several large propositions on which bids have been made are still unplaced, while a number of smaller installations are also pending.

The foundry trade continues inactive. There has been no material increase in the demand for either gray iron or steel castings except for special crucible steel castings for automobile work, producers of which are quite busy.

Edgar V. Seeler and Frank C. Roberts, engineers and architects, have completed plans and invited estimates, due early in April, for a 17-story addition to the Real Estate Trust Building, Broad and Chestnut streets. The addition will measure 22 x 140 ft. on the ground plan. It will have a steel frame and conform to the design of the present building.

The Eynon & Evans Mfg. Company continues fairly active in its pattern and machine shop departments, as well as in its brass foundry. The demand for steam jet blowers is considered quite good, while that for its other specialties is fair. A considerable amount of work of a special character is under construction and general inquiries are reported quite numerous.

The Wm. Steele & Sons Company has been awarded the contract to erect a six-story factory building in Vine street, west of Third, for the England & Walton Company. The same company will also erect a five-story reinforced concrete addition and a one-story boiler house for the Joseph Campbell Company, Camden, N. J.

Proposals for supplies, including scientific apparatus, tools, oils, &c., for use in the First School District of Pennsylvania, will be received until April 5. List of articles, samples and specifications may be obtained from A. F. Hammond, superintendent room 392, City Hall, Philadelphia.

The J. R. Dawson Mfg. Company, manufacturer of wire goods, has purchased a factory building at 3646-3648 North Lawrence street, this city, on which improvements will be made in order to accommodate its increasing business. The company expects to occupy its new quarters early in the coming month.

The Standard Pressed Steel Company reports business 50 per cent. better the past month than for the same month last year. A steady improvement is seen in the demand for pressed steel shaft hangers and Hollowell countershaft hangers. Orders are plentiful, although not large individually, and all departments of the plant are running full time. The foreign demand has been good, particularly from Austria, France and Switzerland, while a material betterment in the trade in nearly all sections of the United States is noted.

Government Purchases.

WASHINGTON, D. C., March 30, 1909.

Bids will be received until April 26 at the office of the United States Engineer, Boston, Mass., for boilers, engines, generators, cable and switchboard.

The Isthmian Canal Commission will receive bids until April 21, Circular No. 500, for centrifugal pumps and other supplies.

The following bids were opened March 22, Circular No. 496, for supplies for the Isthmian Canal Commission:

Class 1.—Nine steam drilling machines with accessories—Bidder 45, Drew Machinery Agency, Manchester, N. H., \$8046; 124, Sparta Iron Works Company, Sparta, Wis., \$5580; 125, Starr Drilling Machine Company, Akron, Ohio, \$6075; 146, Williams Brothers, Ithaca, N. Y., \$6525.

Class 57, two bilge pumps, two hand pumps and two cisterna pumps, has been awarded to Yermilye and Power, New York, at their bid of \$24.70.

The following bids were opened March 23 for supplies for the navy yards:

Class 171.—Three pneumatic grinding machines and six piston air drills—Bidder 25, Chicago Pneumatic Tool Company, New York, \$405; 32, Cleveland Pneumatic Tool Company, Cleveland, Ohio, \$360; 78, Independent Pneumatic Tool Company, Chicago, Ill., \$420.

The following bids were received at San Francisco, Cal., February 25, for a 16-hp. standard gas engine for the launch of the tender Sequoia:

Standard Gas Engine Company, Oakland, Cal., \$915, without

oil tanks, accepted; \$850 with oil tanks and \$760.70 for 12-hp. engine.

W. L. Corson Gas Engine Company, San Francisco, Cal., \$840 without oil tanks and \$875 with oil tanks.
 Hercules Gas Engine Works, San Francisco, Cal., \$1000; \$800 for 12-hp. engine.
 Atlas Gas Engine Company, Oakland, Cal., \$950 for 4-cylinder 15-hp. engine; \$800 for 2-cylinder.

The following bids were opened on March 8 at Tompkinsville, N. Y., for an engine for the motor boat of the tender Orchid:

Lamb Engine Company, New York, \$900, accepted.
 Motor Boat Supply Company, Buffalo, N. Y., \$956.60.
 Fairbanks Company, New York, \$960.
 Terry Engine Company, New York, \$1150.
 Mercury Motor Company, New York, \$1150.
 Charles J. Jager Company, Boston, Mass., \$1456.
 Grant-Ferris Company, Troy, N. Y., \$845; not in accordance with specification.

Bids were opened at the office of the Isthmian Canal Commission, March 22, for item 1, two drills; 2, two riveting hammers, delivery at New York, as follows:

Cleveland Pneumatic Tool Company, Cleveland, Ohio, item 1, \$90; 2, \$60.
 Independent Pneumatic Tool Company, Chicago, Ill., item 1, \$97; 2, \$64.
 Ingersoll-Rand Company, New York, item 1, \$122.40; 2, \$64 and \$72.

Under bids opened November 24 for machinery for the navy yards, the Tabor Mfg. Company, Philadelphia, Pa., has been awarded class 51, one universal tool grinding and sharpening machine, \$1013.75.

The following awards have been made for machinery for the navy yards, bids for which were opened January 12:

Chicago Pneumatic Tool Company, New York, class 143, 12 pneumatic wood boring machines, \$487.60; 144, 11 pneumatic wood boring machines, \$398; class 145, two pneumatic wood boring machines, \$66.50; 146, five electric breast drills and spare parts, \$200; 147, 36 pneumatic scaling hammers with spare parts, \$625; class 148, 43 pneumatic hammers with spare parts, \$790.90; 149, 40 pneumatic hammers with spare parts, \$737.25; 151, 21 pneumatic hammers with spare parts, \$517.65; 152, 25 pneumatic hammers with spare parts, \$609.65; 153, two pneumatic hammers with spare parts, \$49.55; 155, one jamb riveter with spare parts, \$37.40; 156, eight pneumatic holders-on with spare parts, \$120.

Pittsburgh Pneumatic Company, Canton, Ohio, class 150, 14 pneumatic hammers with spare parts, \$255.08; 154, one pneumatic hammer with spare parts, \$28.41.

The following awards have been made for machinery for the navy yards, bids for which were opened March 9:

Goulds Mfg. Company, Seneca Falls, N. Y., class 91, two triple plunger pumps, \$572.50.
 General Electric Company, Schenectady, N. Y., class 121, 30 motors, \$14,675.

Trade Publications.

Electrical Equipment.—Westinghouse Electric & Mfg. Company, Pittsburgh, Pa. Two circulars and booklet. Circular 1164 shows type M. S. mill motors (described in *The Iron Age*, March 18, 1909) for polyphase alternating current circuits, and parts are illustrated and described. Some installations are illustrated, including views of motors operating ingot conveyors, pig casting machines, shears, roll lathes, plating shears, &c. Circular 1160 shows multiple tungsten lamps for alternating or direct current circuits. A booklet, entitled "Motor Talks," calls the attention of owners of central stations to the advantages of advertising the use of electric motors in homes for vacuum cleaning and in grocery stores for operating coffee grinders, &c., and gives specimen advertisements.

Vacuum Cleaners.—W. P. Pressinger Company, 1 West Thirty-fourth street, New York. Booklet. Shows the Santo electrically operated portable vacuum cleaner. It can be operated from a lamp socket and is made in several sizes for house and hotel use. The company also makes vacuum cleaners of any capacity.

Machinery and Tools.—Brown & Sharpe Mfg. Company, Providence, R. I. Catalogue, 4 x 6, 551 pages. This is the 1909 edition of the company's general catalogue of the well-known Brown & Sharpe products. Attention is called to a constant speed drive type of milling machine designed especially to meet the requirements of heavy service, of which two standard sizes have been added to the company's line—No. 2, a heavy universal, and 2 B, a heavy plain milling machine. The several lines of attachments to these machines has been augmented by the addition of new sizes, including a light line of vertical spindle milling attachments and an index attachment for cutting short lead spirals, together with other milling attachments for high speed work. There is shown for the first time a constant speed drive screw machine especially adaptable for motor drive. The company has added another size to the standard plain grinding machines, and new sizes have been added to the line of gear cutting machines, automatic gear cutting machines and automatic screw machines. Most of the important equipment listed in the catalogue is illustrated and a full line of machine tool attachments and small tools is shown.

Electric Controlling Apparatus.—American Electric Fuse Company, Muskegon, Mich. McCoy & Brandt, 619 Ferguson Building, Pittsburgh, Pa., agents. Catalogue, 5½ x 8½ in.,

30 pages. Describes the Allen-Bradley motor starters, which do not employ the step-by-step principle but depend for their resistance upon imperfect electrical connections in a pile of graphite disks in an insulated tube. By means of pressure these disks can be crowded into more perfect control, thereby decreasing the resistance when the controller handle is operated. This form of resistance, it is stated, prevents the possibility of burning on the face plates, and there is no danger of destroying the resistance medium by excessive heat. Various types of controllers embodying these resistance units are described and illustrated.

Foundry Supplies.—S. Obermayer Company, Cincinnati, Chicago and Pittsburgh. Post cards, entitled Obermayer's Historical Series, illustrating the part iron and steel have played in the history of the world. No. 3 of the series shows Hiram casting the pillars for Solomon's temple.

Drilling Machines.—The Silver Mfg. Company, Salem, Ohio. Booklet. Illustrates and briefly describes post drills and bench drills, which are made in several styles, including drills for belt or hand power, variable speed drills, and hand-feed and self-feed drills. A power-feed drill with back gears and automatic stop is shown which in addition to the features of the other drills has a back-gear friction mechanism by which four slow speeds are obtained for heavier work, making a total of eight different speeds.

Firebrick.—Brighton Fire Brick Company, New Brighton, Pa. Booklet. Contains testimonials from users of the Brighton firebrick in combustion chambers of soaking pits and rail mill furnaces, blast furnace lining, &c.

Friction Clutches.—Williams Foundry & Machine Company, Akron, Ohio. Catalogue E, in booklet form. Describes the Akron friction clutch, which is made in 19 sizes from ¼ up to 1000 hp. at 100 rev. per min. The advantages claimed for the clutch are that it is easily applied to the shaft, the entire mechanism being handled as one piece. The pulley is not a part of the clutch and is easily interchangeable. A price-list of clutches is included and reference is made to cast iron pulleys and grease cups also made by the company.

Welding.—Goldschmidt Thermit Company, 90 West street, New York. Pamphlet. This contains 35 pages of instructions for the use of thermit in railroad shops for repair work. The composition of the welding compound is explained and a list of tools required in its use is given. There follow general directions for welding locomotive frames, illustrated with half-tones and line drawings. Methods of repairing various breaks are illustrated. Directions are also given for repairing locomotive driving wheels, connecting rods, &c.

Tube Cleaners.—The Roto Company, Hartford, Conn. Bulletin No. 1. Shows a tube cleaner for water tubes and fire tube boilers, consisting of an air-driven motor armored with hardened steel, which is made in sizes from 1½ in. external diameter, for standard 4-in. water tube boilers. The machine has a speed of from 5000 to 11,000 rev. per min., according to the size.

Saw Sharpening Machinery.—Chicago Saw Sharpening Machinery Company, 30-40 East Erie street, Chicago, Ill. Catalogue, 6 x 9 in., 50 pages. Illustrates a full line of filing room machinery, including a double cut band saw sharpener, automatic band saw sharpener, automatic band resaw sharpener, circular saw sharpener, a combination automatic machine for rip and cross-cut circular saw sharpening, saw stretcher and accessories, brazing tables, combination punch and shear for re-toothing band and gang saws, brazing forges, brazing tables, band saw filers, saw sets, swages, &c. The various machines are briefly described and prices of most of them are given.

The Treasury Department has granted the benefits of the drawback regulations to babblitt metal, manufactured by the Leddell-Bigelow Company, New York, in part from imported lead, antimony and antimonial lead. In liquidation the allowance shall not exceed 87 half-pounds of lead and 12 half-pounds of antimony for each 100 pounds of alloy exported.

The longest continuous trip in the history of inter-urban electric railroads is said to have been made last week, when some of the officials of the Central Electric Railway Association journeyed from Louisville, Ky., to Cleveland, Ohio, without changing cars. The return journey was made in the same manner, the round trip covering 997 miles.

The Alexandria Industrial Club, Alexandria, Ind., has contracted with L. L. Price & Co., of Chicago, to complete the sale of lots and raising of a factory fund which was begun by a Citizens' Committee. The plan contemplates the sale of 600 lots at \$200 each to create a fund sufficient to draw to the city four industries to employ 1000 people.

HARDWARE

IN order to the efficient management of a business, whether in the field of production or distribution, it is essential that it be regarded not simply as a whole but in each of its parts or departments. For this reason the manufacturer beside the obvious division of his business into the manufacturing and selling ends finds it advisable to subdivide these into various subsidiary departments, each of which has its own special responsibility and organization, so as to secure the greatest efficiency in its operation. The management of the business as a whole consists mainly in the proper management of these departments so that each of them does its work in due quantity and quality, at a minimum of expense for the results produced, and in complete harmony with all the other parts of the organization. In large establishments always, and in smaller establishments frequently, it is advisable that this subdivision be carried out in considerable detail, that the work of these minor parts may be separately estimated and directed.

It would doubtless be a surprise to many Hardware merchants to learn of the care and system with which the jobbers and manufacturers with whom he deals classify their customers and those whom they seek to make their customers, adapting their methods so as to secure the business of each class and keeping elaborate records of the various individual houses. Comparatively few retail merchants look after their smaller fields with nearly as much care and detail as the jobbers and manufacturers from whom they purchase give to the incomparably larger fields which they cover. The wholesale merchant, for example, has a complete list of the houses whom he is desirous of selling in all the territory which his travelers visit, with a more or less complete record in regard to the character of their business, their financial responsibility and their relation to his house. This systematic knowledge of those on whom the merchant is dependent for the sale of his goods is found in few retail stores, a condition which is in part explained by the fact that the jobbers and manufacturers cultivating a large field go out actively and solicit business while the retail merchant waits for business to come to him. Without going into the question whether or not the retail merchants make a mistake in assuming this passive attitude and in not putting forth more active and aggressive efforts to effect sales, there is no doubt that many of them would add greatly to the efficiency of their organization if they gave more attention to a classification of the residents in their territory and adopted methods, carefully worked out, which would make the most effective appeal to each class. It will often be found that in some kinds of goods and with some classes of trade the store is doing much less than it might. How to correct this condition and extend business along lines in which it is weak would be a practical question, the consideration of which, if followed up by enterprising and improved methods, would probably yield good results.

Condition of Trade.

With the advance of the season there is a good deal of quickening in the movement of goods from the stores of the retailers. With the manufacturers there is, however, only a limited business doing, as the trade, both wholesale and retail, are looking upon the market as unsettled in the matter of prices, and with a general undertone of weakness. This induces a very conservative position in purchasing, and merchants are keeping down their stocks as much as possible. While a careful and cautious policy at this time is undoubtedly proper there is a tendency with the public and even with merchants to exaggerate the effect which comparatively low priced raw material and a revision of the tariff will have upon the price of finished articles. It should be borne in mind, so far as the tariff is concerned, that there is little likelihood of such radical action by Congress as would let in foreign Hardware to any great extent to the detriment of its manufacture. Lower costs of Iron naturally have effect on the price of the cruder goods which lie near the raw material, as shown in the declines which have already taken place in such goods, the weakness which exists in others and the suspicion with which some are regarded. But while heavy goods are likely to keep step with the raw material, it must be remembered that on many articles in the line of Shelf and miscellaneous Hardware, especially of the finer grades, the saving in material will count but little in the cost of manufacture. The question of labor is of more ultimate importance, but in the Hardware field there is not as yet any general reduction in wages, and the cost of producing goods is not materially diminished. These considerations should be held in mind in view of the disposition to overestimate the reductions in price which are to be regarded as probable in the Hardware field. The practical conclusion is that with conservatism in buying there is no reason for starving stocks, but that assortments should be kept up with a fair, but moderate rather than a heavy supply of goods. The actual changes during the past week are few and unimportant, but in some lines there is, as we have already noted, some irregularity and weakness. It is a market which tests the ability of buyers if they are desirous of obtaining the best prices available.

Chicago.

It is rather to be expected that, as a result of the present unsettled condition of the market, for which the proposed revision of the tariff is measurably responsible, trade should experience more or less shrinkage, especially in those lines more directly affected by a lowering of duties. Any action that tends to disturb the underlying basis of commercial and industrial operations is bound to restrain activities so long as the issue remains in doubt. When coupled with other disturbing factors such as are present in the trying period of depression from which the country is only now emerging, the situation is all the more complicated and the hesitation more pronounced. But it may be said that, however heavily these influences bear upon the Hardware trade, they are perhaps less keenly felt than in many other lines. This seems to be true in the West at least, where the bulwark of agricultural wealth forms a protecting shelter against the adverse tides that are set against the forward progression of business. There is abundant evidence that it is not scarcity of capital so much as it is timidity in such times that prevents the development of enterprises that would call it into action and so restore a normal

balance in commercial and industrial affairs. The growth of building construction now observed, and which is always an indication of substantial prosperity, has hopeful significance of a better demand for Hardware goods. A number of Chicago structures of considerable magnitude whose requirements in Builders' Hardware will be large are expected to come into the market soon. In addition to the La Salle Hotel and the People's Gas Light & Coke Company's office building, whose Hardware has already been purchased, similar orders are yet to be placed for the new depot of the Chicago & Northwestern, the Vendome Building, the Blackstone Building, the New City Hall, and others of less importance. Merchants complain that while the volume of business moving in Builders' Hardware is considerable, the tendency of demand is toward the cheaper grades, and disappointment is expressed at the cheapness of grades selected for buildings of a class that would warrant finer trimmings.

Louisville.

BELKNAP HARDWARE & MFG. COMPANY.—The market is still devoid of any excitement. It is not to be denied that an excellent volume of business is flowing through the well worn channels of distribution day by day, but there is not a large volume to make us believe that the Hardware millennium comes to arrive, as our French brother would put it. Those who are buying goods are evidently doing so without a thought for the tariff effect or any possible realization of speculative advance. In fact, there seems to be less attention paid to the tariff by the people at large than at any previous similar time. There is a sort of conviction that not much will be done anyhow, and if it is done, it will not be done quickly nor harm the individual consumer. In other words, there are no fears abroad of a great disturbance, or, if any at all, it is apt to be so remote that the people are not bothering their heads about it just yet.

What strikes most of us is the inadequacy of the means proposed to raise revenue sufficient to meet the extraordinary appropriations of the last Congress. During the period of great prosperity, when the railroads were buying liberally, and yachts and automobiles were the only outlet for surplus incomes, Congresses proceeded on the supposition that the supplies of funds in the Treasury were practically inexhaustible, and the billion dollar Congress, instead of being an exception, became the rule. This came about possibly by reason of the familiarity with the enormous figures begotten of various trust operations. Hundreds rolled into thousands, thousands into millions, and the transition from millions into billions was easier than the previous step a couple of decades ago.

The President's salary at Washington had to be marked up, because presidents of sundry corporations, financial and others, were getting more money, and the contrast was disturbing to the public mind. The appropriations for the army and navy were doubled because the industrial armies were claiming pre-eminence by reason of more effective organization, the properties being capitalized at such figures as to make the Government appropriations look small. We have got out of our homespun clothes and cotton bosomed shirts and proceed to clothe ourselves in purple and fine linen.

To raise the requisite funds to pay for this royal raiment as a nation is the onerous burden that has been laid upon the present administration. Suppose we try an economical tack and try to hold things down a bit, instead of expecting our revenues larger than is possible under the present arrangement. It is unpopular to retrench always. Everybody thinks that somebody else ought to pay the piper while the dance goes on. Maybe we shall devise acceptable taxes in some shape that will yield the requisite amount, but it will be no easy task.

It is noteworthy that the Superintendent of the Census has pared down his estimates some \$4,000,000 or \$5,000,000. But there is no such proceeding on the part of the Pension Bureau, for example; in fact, not in any other that has fallen under our notice. Government positions in the civil service are greatly sought after because of the liberal salaries paid and the apparently easy work which is required. This, together

with the limit of shorter hours, makes these places very attractive at the time.

Collections are fair; money relatively easy in the centers and on the outskirts as well. An immense acreage of almost everything growable is being planted on the farms, as the high prices prevalent last year rendered this business very profitable. On the other hand, manufacturers do not seem to be disposed to make up goods ahead, and it may be that there will be difficulty in getting certain lines when once the demand for fall trade begins to assert itself.

St. Louis.

NORVELL-SHAPLEIGH HARDWARE COMPANY.—In the last 25 years conditions on the farm have changed rapidly. This is especially true in the Western States. The farms in Iowa, Nebraska, Kansas, Oklahoma and the Indian Territory were settled by pioneers. They came in their prairie schooners and brought all their worldly possessions with them. Generally these worldly possessions were made up of a large family of children. These sturdy pioneers not only turned the sod to put in their first crops of corn and wheat, but they used this same sod for their sod houses. The first years after they pre-empted their quarter sections of land were hard ones. They came to town, poorly dressed, in their farm wagons. Like the patriarchs of old, they wore long, flowing beards.

But now the times have changed! Now these same farmers have comfortable homes. Their houses have modern and up to date plumbing. They have hot and cold water in their bathrooms. Not only is the water pumped through the house by a gasoline engine, but this same engine does the washing and churning. First they built barbed wire fences, but now they have passed on to netting fences without barbs. In their parlors they have pianos and organs. They telephone their orders to town, and they ring up to get the latest market reports. They not only drive to town in carriages but in many cases use automobiles.

Verily, times have changed with the farmer, but judging from some of the articles in the papers and from some of the addresses of our lawmakers this changing condition is not realized. These articles would have been very true if written 25 years ago. Probably some of our orators are inspired by the experiences of their youth, having forgotten that "the world do move," and that the lot of the farmer of to-day, generally speaking, is cast in very pleasant places.

Since dictating the first part of this article *The Iron Age* of last week has been laid on the writer's desk, and he is a good deal surprised, in glancing over the editorial, to note that it is written along this same line of thought. These are surely days when the farmer is enjoying the best of it and the worker in the large city has the worst of it.

Since the panic times have been very hard in the big cities because a large proportion of the population in these cities depends, either directly or indirectly, upon manufacturing. In most of the large cities of this country "for rent" signs on small houses are conspicuous. Real estate men tell me this simply means families have "doubled up." Four families are often living in a house that formerly was inhabited by only one. By this means those in families who are working have been able to care for others who are out of work. All those who are engaged in relief work in the larger cities know that unusual calls have been made upon charitable institutions in the past year. There has been great need—greater need than we realize—because the proud poor have suffered silently rather than sacrifice their own self-respect by seeking aid.

This week a gentleman prominently connected with a large shoe manufacturing establishment in this city told me that they had been able to do very well the past year on account of the decrease in the value of many of the raw materials that go to make up shoes. He boasted of the very satisfactory profits of his business. The next day I saw his name, for a large amount, on the subscription list of a charitable institution.

The following day at a meeting of the trustees of Self-Culture Hall, the superintendent of that institution told

me that respectable working women in the neighborhood who were ill often did not have the necessary cash to buy medicine; that she frequently had applications for medical aid, and that the condition among some of these shoe workers was distressing. This superintendent said the wages of these workers, especially the women, had been cut down to a point that was lower than the cost of living. The workers were afraid to strike because they were aware their positions could be easily filled. I asked this superintendent what shoe factories in the city were the hardest on their female workers, and she gave the name of two factories, one of them being the man whose name was on the subscription list. Comment is hardly necessary.

One-half of the world does not know how the other half lives, and probably one-half of the world does not care. What we want and what we demand is results. The superintendent who can produce the greatest net results is the man for us. How many of us care how these results are obtained? We see one end of the business in large sales, low costs of production, handsome dividends, increase of capital stock. How many of us see the other end of the business in the distress and despair of those living in the under-world?

Of course all this is trite; it is an old story; it is out of line with a trade report, but happening to hear this report from the superintendent of Self-Culture Hall, happening to be thinking along these lines, happening to read the editorial in *The Iron Age*, makes one forget the regular routine of business and indorse the sentiments of *The Iron Age* article.

The fact is that in this country to-day the real objects of our sympathy and of our interest are not the farmers, but the wage earners who labor in the factories and in the sweatshops of the large cities. It is true these wage earners to a large extent are foreigners—the native born American cannot exist under such conditions—but even if they are Jews and Russians and Polacks, they are human beings.

Such editorials are timely when the steel mills and others are talking about flat reductions in salaries—reductions extending from the president down to the office boy. All this looks very well in print. A reduction in the salary of the president means nothing so far as the necessities or luxuries of life are concerned, but when this reduction gets down to the employees who draw small salaries it often means real suffering.

If Governmental investigating committees and commissions are to be popular in the future we suggest some of them take up certain lines of manufacturing and analyze the much vaunted share of the profits enjoyed by the great mass of laborers. We would like to see a statement of some of these figures on a percentage basis. This would be especially interesting just now when the tariff is being considered. We would like to know just how much of the tariff protection the various laboring men get in the different lines of industries that are so well protected. Won't Andrew Carnegie give us some of the figures, because we agree with him that a few figures are easily understood, while a multitude of figures are frequently confusing.

Baltimore.

CARLIN & FULTON.—Trade in March has been as variable as the weather. Orders have been frequent, but seldom large, and it is evident that the average buyer is watching his stock carefully and buying but little more than for the actual immediate requirements of his market. This is a wise procedure, no doubt, looking to the possibilities of lower costs, but are these reductions to occur?

There is little reason to expect much lower prices resulting from the effects of the proposed tariff bill which are problematic. The largest manufacturers in the trade do not feel disposed to discount tariff reductions, and in the meantime the spring season is rapidly passing with stocks starved, and trade halting and waiting for what may never occur. With a reduction of \$2 or \$3 in the duty per ton on steel or iron, how much cheaper would a gross of Cupboard Catches be? Suppose the duty on Wire Nails is cut from 50 to 25c. per 100 lb., how much

nearer are the possibilities of foreign competition when the duty could be abolished entirely, and still the foreign manufacturer unable to invade the American market? It is to be hoped that the discussion will soon end, and some bill passed so that the uncertainty may end.

The country is undoubtedly in a most excellent condition to absorb immense quantities of goods, and the quicker Congress disposes of these economic questions the better for the nation. Never have the prices of agricultural products been higher, and the farmer should surely be happy, while the householder finds that to fill the market basket costs more than ever in his experience.

When the manufacturers can make their contracts with a certainty as to the cost of raw materials, and the railroads enter the market with their immense purchases for equipment needed, it will not take long for the lagging industries of the country to revive.

Philadelphia.

SUPPLEE HARDWARE COMPANY.—We referred to two matters in our letter to *The Iron Age* March 18. The first, regarding the tariff changes now before Congress, is quite an important matter, and there will probably be a continuance of hesitation in trade until after the subject has been carefully considered and the new tariff adopted. We hope it will be put through at a very early date.

The coal mining matter, we understand, must be decided upon by April 1—that is, whether there is to be a strike or a continuation of the present agreement. We certainly hope that this will be adjusted satisfactorily to both operators and employees, which will not only help trade throughout the coal section, but have a good deal of effect throughout the country. It is understood that in case the miners employed hesitate or hold off the operators may put new workmen in their places, as there are quite a number of men out of employment. We trust nothing of this sort will develop.

Buyers in the retail trade, do not feel like keeping up their stocks until these matters are settled. We are now about to enter April, and in that month trade generally has been very good, but we cannot at this writing say what it will be this year. Collections, however, are very fair, and our customers are all doing the best they can.

Boston.

BIGELOW & DOWSE COMPANY.—Fine weather is helping to increase sales of Hardware. Each week and each day shows an improvement.

The decline in the steel market frightened some buyers of Wire Nails and Fencing, and orders were canceled fearing a decline. The factories did not reduce the price of Fencing, and to-day are far behind on their orders. Although the factories have nearly doubled their output, the increased demand has created a shortage equal to that of either of the past two years. All irregularities in the Wire Nail market have been settled and prices are firm. At no time has the American Steel & Wire Company deviated from its established price, and there is no present prospect of their doing so. The fact is the trade are not demanding lower prices, but want a settled market.

The discussion of the reduction in the tariff is a less disturbing factor than it was when it commenced. Like the steel market all the changes will have been discounted long before the bill is passed and becomes a law.

Early March sales showed a handsome increase; later they fell off, but for the past 10 days there has been a steady gain which we believe marks the turn of the tide to a great improvement in general business throughout the country.

Nashville.

GRAY & DUDLEY HARDWARE COMPANY.—There has been but little change in the market's condition in this locality since our last report. The volume of business remains about the same, spring trade evidently having reached its maximum volume for this season. While it is considerably better than in 1908, it is far below what it was in 1906 and 1907.

Trade in some lines is even better than in former years. Plows and plow equipments, steel goods and a

few other lines, which are used by the agricultural class have sold more freely than ever before. This would indicate that the farmers are going to make the effort of their lives to produce another large crop. Wheat in this section is looking splendidly.

We are having rather a late spring, which has retarded the growth of the early vegetable crop, which has become a very profitable one in the Southern country. Late frosts have injured some of the fruit, but the indications are still good for a pretty fair crop of fruit.

The many newspaper articles with reference to lower prices being made by the United States Steel Corporation have had a tendency to check the buying of steel products. Collections are about as usual at this season of the year.

Portland, Oregon.

FAILING-MCCALMAN COMPANY.—As the year goes on natural conditions in this territory continue to improve, and so far there is no good reason why this should not be the best year in the history of the Pacific Northwest. If natural conditions continue as favorable as they are at present, it also should be the most prosperous, and if it is not, the Hardware jobbers of the Coast will have no one to blame but themselves.

All along the Coast there are continual reports of large increases in the immigration and of great development in the country tributary to the Pacific Coast jobbing centers.

The tariff agitation has so far hurt us in only one direction, that is in our trade with the lumber districts, and we hope that as soon as the present uncertainty is removed to see a large revival of business in that territory.

Taking it all together, as we have said above, natural conditions could not be better. Our only hindrances are those due to politics and to other human weaknesses.

Omaha.

LEE - GLASS - ANDRESEN HARDWARE COMPANY.—The month of March closes with trade conditions in the trans-Missouri region in a very favorable position. The volume of business shows up satisfactorily. A season of continuous rough and cool weather has retarded farm work, particularly planting. With the advent of warm and genial weather a different aspect would surround the situation.

There is nothing in the general business situation at the present time, nor any developments in sight, calculated to disturb the satisfactory volume of business that is now going on.

It is expected that the present status of the situation will remain about where it is during the next few months; after that everything will depend on the extent and value of the crops.

St. Paul.

FARWELL, OZMUN, KIRK & Co.—March has been a satisfactory month in the spring business. There have not been many days of unfavorable weather, and the snows that had accumulated considerably in some sections have now largely melted away, and thus far without any damaging floods.

Spring orders have been coming in satisfactorily. These orders are not quite so large as they have been at times, but they are of fair size and are making up in number for the small reduction in amount. These orders show that trade is in a healthy condition, and it may reasonably be expected that spring business will run along satisfactorily if there are no unexpected hindrances.

Business interests are watching closely the discussion of the tariff question now going on in Congress, but this does not interfere largely with the daily grind that is necessary to supply the current wants of the country.

Cleveland.

W. BINGHAM COMPANY.—Business interests throughout our country, in fact, the world over, are awaiting the action of Congress on the pending tariff bill, and it is earnestly hoped that a speedy, intelligent and just bill will be passed by both Houses, and when it is signed by

President Taft we believe that the hum of industry will be heard in all of our borders. Considering the times we are passing through and the uncertainty of what may happen in way of legislation, we are enjoying a very good general Hardware trade in this section.

The navigation of the Great Lakes is now open. The large passenger and freight steamers of the Detroit & Cleveland Line from Cleveland to Detroit have made their first trip, and a vast amount of all kinds of merchandise will go to the Northern and Western States from Cleveland from now on. The Cleveland & Toledo Line of steamers will start next month and will distribute freight from Toledo west and south by trunk lines that run into Toledo. The magnificent passenger and freight steamers of the Cleveland & Buffalo Line will start plowing the waters between Cleveland, Erie and Buffalo about the middle of April. They will open up quick, cheap freight transportation from Erie via the many trunk railroad lines that enter this port. Also there will be a large distribution of merchandise from Buffalo via New York Central, West Shore, Lackawanna, Lehigh Valley, Buffalo, Reading & Pennsylvania and other trunk lines centering there to many points in the interior of New York and Pennsylvania. Also via the Erie Canal to the interior points in New York. So by Cleveland's splendid location on the Great Lakes, also railroad communication, and by the help of their vast army of intelligent salesmen, this city will be able to market millions of dollars worth of Hardware, Mining, Milling and Manufacturers' Supplies, to say nothing of other commodities manufactured in Cleveland, for we cannot be hemmed in and trade barred from us on account of transportation either to the north, west, south or east.

Prices for the most part in the general Hardware lines are firm and steady. A few jobbers sacrificed the price on some goods, anticipating lower prices, to use a homely expression, went off "half cocked" when they heard the first report announcing a drop in price of some steel commodities, but many of them have returned to their senses and concluded to trust in the American Steel & Wire Company and not sacrifice their goods needlessly on account of fear.

There is a fair demand for 'Mechanics' Tools and Builders' Hardware; also Steel and Iron Merchant Pipe, Black and Galvanized, and Malleable Cast and Brass Fittings are in demand, showing that there is a lot of work going on all over our country.

In this district especially the farmers have had the best run of maple sap they have had in years, and jobbers have had a big trade in Sap Bits, Sap Spouts, Sap Pails and Sap Pan Iron. Maple sugar and syrup crop alone in Cuyahoga and Geauga counties will be worth to the farmers this year over \$200,000, so that the farmers in this "neck of the woods" are going to have a mighty sweet spring opening.

NOTES ON PRICES.

Wire Nails.—The market has about reached normal conditions in regard to the maintenance of prices, as the manufacturers generally are reported to be holding to the regular quotations. Demand continues along even lines, being confined to comparatively small lots, as the trade is uncertain as to the future stability of the market. Jobbers and retailers are apparently keeping assortments down to actual requirements, as far as possible. Quotations continue as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

| | |
|---|--------|
| Carloads, to jobbers..... | \$1.95 |
| Carload lots to retail merchants..... | 2.00 |
| Less than carloads to jobbers..... | 2.00 |
| Less than carloads to retail merchants..... | 2.10 |

New York.—There is no change in the volume of business in the local market, which continues along moderate lines. Wire Nails in small lots from store are held at \$2.25 per keg, base, which price is regarded as being fairly well maintained.

Chicago.—Specifications are coming out at a fairly good rate, together with a moderate run of new orders,

which indicate no abatement in the consumptive demand. Jobbers, however, are not increasing their stocks beyond the point of present requirements, which means that they are buying conservatively. Usually at this season of the year buying includes prospective wants for at least 60 days ahead, and since only present needs are being considered, the prospects for a growing demand through the active season are considered promising. The disturbing element in the price situation has about disappeared, and it is reported that prices are now as firm and regular as they have been at any time in some months. Quotations are as follows: \$2.13 in car lots to jobbers, and \$2.18 in car lots to retailers, with an advance of 5 cents for less than car lots from mills.

Pittsburgh.—The Wire Nail market shows no important change over conditions noted in this report last week. The trade is placing orders very conservatively, and buying only such quantities of Nails as are required to meet current needs. It is not likely demand will show much betterment until the uncertainty as to whether there will be a reduction in prices has been removed. The leading makers of Wire Nails are adhering to regular prices and shipments by the mills are fairly large.

Cut Nails.—The market continues to be without striking features, and demand is confined to actual requirements. The lack of consumptive demand and the uncertainty in regard to future prices restricts buying in large quantities. Prices were reaffirmed at the meeting of the Eastern Cut Nail Association held last week. Steel Cut Nails continue to be regularly quoted at \$1.80, base, per keg, f.o.b. Pittsburgh, for carloads, but on desirable orders this price is frequently shaded from 5 to 10 cents. Iron Cut Nails are held at an advance of 10 cents per keg over Steel Cut Nails in the Western market, but in the East this differential is not observed.

New York.—There is comparatively little being done in Cut Nails in the local market. In small lots at store Cut Nails are held on the base price of \$2.05 per keg.

Chicago.—No marked change is discernible in the demand for Cut Nails, which continues light. At the same time the near approach of spring activities in building is counted on to quicken the movement, and the chances are that it will be considerably accelerated within a short time. Uncertainty as to the maintenance of present prices causes buyers to hesitate and in consequence sales are restricted to small lots. Regular quotations are as follows: In carload lots, to jobbers, Iron Cut Nails, \$2.08; Steel Cut Nails, \$1.98.

Pittsburgh.—No change was made in prices of Cut Nails at the meeting of the Eastern Cut Nail Association, held in Philadelphia on Wednesday of last week. Demand continues quiet, buyers placing orders only in small lots to cover current needs.

Barb Wire.—The advent of milder weather has had the effect of increasing demand to a moderate extent, which is expected to continue if not increase as the season advances. Conservative buying will probably be followed until the trade is satisfied as to the future of the market. Quotations are on the following basis, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

| | Painted. | Gal. |
|--|----------|--------|
| Jobbers, carload lots..... | \$2.10 | \$2.40 |
| Retailers, carload lots..... | 2.15 | 2.45 |
| Retailers, less than carload lots..... | 2.25 | 2.55 |

Chicago.—Now that spring Fence building is in full swing, there is a noticeably better demand for Barb Wire. The requirements of consumers are believed to be great enough to insure a steadily increasing volume of business. Prices are on the whole being evenly held, and but little complaint of cutting is heard. It is quite evident that the buying will be closely regulated by the rate of consumption, as jobbers are not buying ahead further than is necessary to meet current demands. Quotations are as follows: Jobbers, Chicago, car lots, Painted, \$2.28; Galvanized, \$2.58; to retailers, car lots, Painted, \$2.33; Galvanized, \$2.63; retailers, less than car lots, Painted, \$2.45; Galvanized, \$2.75; Staples, bright, in car lots, \$2.25; Galvanized, \$2.55; car lots to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

Pittsburgh.—Slight improvement in demand is reported, probably due to the milder weather. The trade, however, is placing orders very cautiously, and is keeping stocks as low as possible until satisfied there will be no reduction made in prices. Demand from the South is improving, and shipments to that section by the mills are fairly heavy. It is said that regular prices are being well maintained.

Plain Wire.—Specifications on contract orders are increasing, this making a slightly larger demand upon the manufacturers. New business is light and confined to small quantities, a policy which will probably continue while the stability of the market is in question. Quotations per 100 lb. to jobbers in carload lots are as follows, on a basis of \$1.80 for Plain and \$2.10 for Galvanized, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days, the usual price to retailers being 5 cents additional:

| | | | | | | | | | |
|----------------|--------|------|------|------|------|------|------|------|----|
| Nos. | 6 to 9 | 10 | 11 | 12 | 12½ | 13 | 14 | 15 | 16 |
| Annealed..... | \$1.80 | 1.85 | 1.90 | 1.95 | 2.05 | 2.15 | 2.25 | 2.35 | |
| Galvanized.... | 2.10 | 2.15 | 2.20 | 2.25 | 2.35 | 2.45 | 2.85 | 2.95 | |

Chicago.—The growing demand for Woven and other forms of Wire Fencing is bringing out a better run of orders from manufacturers. Doubt as to the future trend of prices is deterring buyers from anticipating requirements and as a result orders for small lots are being placed with greater frequency. We quote as follows: Car lots to jobbers, \$1.98, f.o.b. Chicago, and to retailers, \$2.05.

Pittsburgh.—The Fence building season is now pretty well advanced, and specifications against contracts are coming out a little more freely. New orders, however, are only for small lots to meet current needs, and until it is known whether present prices will be maintained, this policy will no doubt be continued. It is said that regular prices are being well observed by the larger mills, which show no disposition to cut the market in order to get business.

Sheet Copper.—The producers now have the market for Sheet Copper well in hand, and their quotations are based on quantity rather than class of trade. The store price is 18 cents per pound, although good sized orders in sufficient quantity to ship from mill obtain some concessions.

Sandpaper.—Sandpaper is steady, with the usual concessions made by manufacturers of the newer brands. Special prices have recently been withdrawn by one or two houses of this class.

Brass Cocks.—A slightly easier tone has been noted in plumbers' and Hardware grade Cocks within the past few weeks. This is regarded as a reflection of business conditions in Copper and Brass. Recently the tendency has been rather toward improvement.

Horseshoes.—It is reported that another conference of manufacturers of Horseshoes and Calks will be held early in April. Buyers show a disposition to keep down their stocks of these goods.

Sash Weights.—The Sash Weight market is in an unsatisfactory condition and prices are lower and irregular. They vary as usual very much in different parts of the country, and in the West are represented by a discount of from \$19 to \$20, in carload lots. The demand is of only moderate volume.

Rope.—There is nothing to report in the way of increased demand, manufacturers referring to the past two weeks as being more than usually quiet. They are, however, encouraged by the outlook for a revival of trade in the future. General quotations on small quantities of Rope, 7-16 in. in diameter and larger, are as follows: Pure Manila, 8¼ to 8½ cents; Pure Sisal, 6¼ to 7 cents. Mixed grades of both kinds grade down in price according to quality. Jute Rope, ¼ in. and up, No. 1, is 6¼ to 6½ cents, and No. 2, 5¼ to 5½ cents.

Window Glass.—The conditions prevailing in the Window Glass market show no indications of immediate improvement. It is estimated that there are now between 1500 and 1700 hand operated pots in blast, the output of which exceeds the demand. The market is al- luded to as being demoralized by low prices, and it is

intimated that still lower discounts may be named early in April, particularly on the lower grades, which are accumulating in manufacturers' stocks. Another effort will be made by the committee to obtain the required number of signatures of hand operators to insure the formation of the Imperial Window Glass Company. Discounts from jobbers' list, October 1, 1903, range from 90 and 25 to 90 and 30 per cent. on single, and from 90 and 30 to 90 and 45 per cent. on double strength Glass, according to location and seller.

White Lead in Oil.—During the month Lead in Oil has been moving in a small way, purchases being for conservative quantities. Prices have been well maintained and the recent advance in Pig Lead may have a strengthening effect upon the market. Quotations are as follows: In 100, 250 and 500 lb. kegs, 6¼ cents per pound; in 25 and 50 lb. kegs, 7 cents per pound, with the usual advances on smaller packages.

Linseed Oil.—The fluctuations of Flax Seed, a cent or more up or down day by day, has not affected card prices of Linseed Oil, although the market has a slightly easier tone. The demand continues light. Card prices in 5-bbl. lots are as follows: State and Western Raw, 55 cents per gallon; City Raw, 56 cents per gallon. Boiled Oil is 1 cent advance on Raw.

Spirits Turpentine.—The demand has been comparatively light at this point during the week. The price fell off ½ cent per gallon, but has regained the loss, and is now the same as at the time of our last report. The following prices represent the New York market: Oil Barrels, 40 to 40½ cents; Machine Made Barrels, 40½ to 41 cents per gallon.

Handled Hammers.—There is an undertone of irregularity in the market for Handled Hammers, particularly Machinists' Hammers. Manufacturers are endeavoring to maintain established prices, but competition is sharp and occasional concessions are reported.

Stove Boards.—Reports are to the effect that prices on regular lines of Stove Boards for the coming season will be the same as last year.

Wire Goods.—Leading manufacturers of Wire Goods, such as Fly Traps, Dish Covers, &c., which are now coming in season, are naming prices not materially different from those of last year. Corn Poppers, which are in light demand at this time of year, are also unchanged.

Asiatic Export Business.

JOHN W. OWEN has made arrangements with Markt & Co., 193-194 West street, New York, to take charge of the Asiatic business of that well-known export house. He will assume his duties April 1, making his headquarters in New York. Mr. Owen has had extended experience in Hardware and allied lines through his connection with Sargent & Co., J. C. McCarty & Co., H. C. Marshall and the American Axe & Tool Company. Six years ago he established the branch of the New York Export & Import Company at Singapore, Straits Settlements, and remained in charge there until his return to America last fall.

Mr. Owen's practical experience in Singapore and his occasional trips to various parts in the Far East have fitted him to manage what is admittedly a difficult trade to secure and hold in competition with the English, German and Dutch houses, which have been long established in the territory. A knowledge of Oriental markets, wants and methods of transacting business is required, which is only secured through actual contact.

CAMERON & BYINGTON, formerly of 43 Centre street, are now occupying better accommodations at 103 Reade street, New York. Their business is largely in Machinery, Tools and Supplies for machine shops, factories, mills, contractors, railroads and vessels for both domestic and foreign trade, considerable export business being done. Before the establishment of this business, several years ago, both members of the firm were for many years with Manning, Maxwell & Moore of New York.

Hardware Freights.

Transcontinental Roads Checking Rates.

THE rate experts of the Transcontinental railroads are engaged in checking rates to Spokane, Salt Lake and other Transcontinental points, preparatory to issuing new tariffs which will conform with the orders of the Interstate Commerce Commission in the Spokane and Denver cases. While there has been no definite announcement that the railroads will accept these orders of the commission without a contest in the courts, it is understood that the reductions will be made without any serious or protracted litigation. The reduction which the rate clerks are checking to Salt Lake will fully equal the reduction ordered in Denver rates.


A Disposition to Favor Interior Jobbing Points.

It will be the policy of the Transcontinental roads in the future to build up Spokane, Salt Lake and other interior jobbing points, at the expense of the cities on the Coast. When the Panama Canal is opened it will be impossible for the all-rail lines to make rates to the Coast that will equal water rates. It is intended to meet this problem by making low rates from Eastern territory to interior points as far as the Cascades, and high rates from the Coast to points East of the Cascades, so as to keep the interior traffic in the hands of the all-rail lines. Water competition in connection with the Panama Railroad and the Tehuantepec route is already proving troublesome to Coast points, and the revision of Transcontinental rates which is now pending is the first step toward a readjustment.

LOCAL merchants should be warned of a fraud which has been perpetrated on a number of downtown Hardware houses by which valuable goods have been obtained under false pretenses. The familiar method has been employed of prefacing a call by a telephone message. In one instance the message purported to come from a prominent construction company, which was said to require the delivery of two each, 18, 24 and 36 in. Stillson Wrenches to a messenger then on the way. Subsequently a man called at the merchant's store and presented the general card of the company, which, of course, could be easily obtained, on the back of which was specified the goods referred to over the 'phone, and they were delivered. Subsequently it was found that the telephone message was a fake and the man an impostor. It may be suggested that a check on telephone orders can be secured by subsequently calling up the concern supposed to have telephoned and confirming the message.

THE CARPENTER-MORTON COMPANY, 77-79 Sudbury street, Boston, Mass., established in 1840 and long and favorably known as a manufacturer of Paints and Varnishes, is calling attention to its Quality Brand Roofing, a high grade ready prepared article which it has been making for upward of two years. We are advised that it has already won such a place in the market that during the month just closing shipments aggregated a train of 15 cars containing 12,800 squares, or enough to make a 32-in. walk 100 miles long. The company issues attractive advertising matter in regard to this roofing which it is ready to supply liberally to merchants, besides advertising for them in local papers, and has an attractive exclusive agency proposition which it will be glad to outline to those interested. The Roofing is made from long fiber wool flax, saturated and coated with natural asphalt. Is not affected by heat or cold, and is easily applied and very durable.

J. A. PENCE & SON have bought the business of W. W. Weaver, Madison, Neb., and carry Shelf and Heavy Hardware, Stoves, Tinware, Housefurnishings, Paints and Oils.



THE QUESTION BOX

THIS DEPARTMENT is open for the discussion of questions which arise in the practical conduct of the Hardware business.

- I. The Iron Age is constantly in receipt of letters asking information in regard to many matters connected with the management of a Hardware store and the problems of the Hardware trade. Many of these inquiries are of general interest, and will be presented for discussion in these columns.
- II. At the annual conventions of the Hardware associations the Question Box is a valuable feature. The expression of the experience and opinions of the merchants is of great interest, and suggestions of real value are elicited.

Many a Hardware merchant has in this way received information or pointers which he could apply very advantageously in his own business.

At a live Hardware convention the pressure of other business often crowds the Question Box into narrow limits, and many good questions are left untouched.

THE IRON AGE QUESTION BOX.

The association Question Box ordinarily represents the merchants of a single State, but these columns, which are read in every State and Territory, are open to the trade of the entire country for the asking and answering of questions and a free interchange of views.

On some questions there will be editorial comment, but the principal aim of the department will be to give the views of our readers on the subjects presented for discussion.

The department will be conducted in such a way as to make it of as much practical usefulness as possible.

It is not intended for controversy or protracted discussion, but if there is a difference of opinion in regard to subjects submitted there will be ample opportunity for the expression of the views of the trade.

A CORDIAL INVITATION.

With the co-operation of our readers we believe this department may be made of great value, as it discusses questions about which the trade are thinking, and gives information on practical points which should be helpful to merchants.

We accordingly invite our readers to make use of these columns, sending in inquiries and answering the questions propounded.

Correspondents are expected to give their names and addresses, but in order to encourage frank expressions of opinion the advices of

our correspondents will be treated in confidence, the names and addresses not being published.

QUESTIONS REFERRED TO OUR READERS.

The following inquiries have recently come to us from Hardware merchants, and are submitted to our readers with a cordial invitation to them to reply:

Turning Stock Three Times a Year?

QUESTION NO. 1. FROM PENNSYLVANIA: *Is it possible to make money in the Hardware business without turning stock three times in the course of a year? That is to say, if a stock inventories \$20,000 at cost figures, can they make any money unless their annual sales are \$60,000?*

Co-operative Buying.

QUESTION NO. 2. FROM MAINE: *Can organization for co-operative buying be advantageously resorted to by merchants to enable them to meet competition of catalogue houses?*

Manufacturers Selling White Lead to Consumers.

QUESTION NO. 3. FROM NEW YORK: *What is the opinion of the trade in regard to the policy of the White Lead manufacturers in selling to consumers so that the retailer's profit has been whittled down to almost nothing?*

Departments in Hardware Stores.

QUESTION NO. 4. FROM PENNSYLVANIA: *Have any of your subscribers had any experience in departmentizing their stocks? That is, knowing just what their sales of various departments are, charging up such departments the costs and their proportion of the expenses of doing business. If so, I should be glad to know how it has worked out.*

Omissions in Bills of Lading.

QUESTION NO. 5. FROM FLORIDA: *Why will manufacturers and jobbers shipping goods fail to put weight and rate of freight in the bills of lading?*

In sending in the above question our correspondent remarks that this failure upon the part of the jobbers of goods has cost him many dollars and cents, and given him untold trouble and annoyance. He makes the point that if either weight or rate is left out of the bill of lading it is practically worthless.

Uniform Size of Invoices, Etc.

QUESTION NO. 6. FROM TEXAS: *Would it not be well if the Hardware people should adopt the plan of having all invoices, statements and letters of a uniform width, as this would be much better for filing?*

Replies to any of the above questions are requested from our readers, whose co-operation in making this department of practical value will be greatly appreciated. Address *The Iron Age Question Box, 14-16 Park Place, New York.*

HARDWARE CLUB OF NEW YORK.

AT a meeting of the governors of the Hardware Club of New York, March 24, following the annual election of governors March 20, the following officers were chosen for the ensuing year: Thomas F. Keating, president; Arthur G. Sherman, vice-president; Alfred D. Clinch, treasurer, and Joseph Gales, secretary.

The new president, whose portrait is herewith given, has long been prominently identified with the Hardware trade. For many years he was with the Yale & Towne Mfg. Company as manager in New York and an officer of the company. More recently he has been interested in the manufacture of Time Locks for banks, trust and safety deposit companies and similar institutions demanding fine work, as treasurer and general manager of the J. M. Mossman Company, 23 Warren street, New York.

He was one of the charter members of the Hardware



THOMAS F. KEATING.

Club and has also been a governor since its organization. He served the club as treasurer until about two years ago. These offices conferred on him testify to the affection and honor in which he has always been held. His election as president is a fitting recognition of his wise and faithful service in this exceptionally prosperous club, as well as of his position as a merchant and his high standing as a public-spirited citizen.

The Board of Governors as now constituted includes Alfred D. Clinch, Terence F. Curley, Edward Stagg, Henry L. Freeland, Francis B. Griffin, James H. Kennedy, Joseph Gales, George H. Sargent, Arthur G. Sherman, Edward C. Van Glahn, William Bishop, Eugene Bissell, Thomas F. Keating, J. Leonard Varick and Richard R. Williams, the last five having been re-elected for another term of three years.

Death of Harry W. Chester.

H.W. CHESTER, manager of the Sporting Goods department of Hibbard, Spencer, Bartlett & Co., Chicago, and for several years a director of the corporation, died March 25, after suffering for about a week with pleuro-pneumonia. He was born in Mobile, Ala., in 1864, and entered the employ of Hibbard, Spencer, Bartlett & Co., in 1882, with whom he made rapid progress and by whom he has long been held in high regard.

Mr. Chester was also prominent as a citizen of Chicago and gave much time to public spirited work. He was secretary of the Citizen League and one of the organizers of the Chicago Association of Commerce. For some time prior to his death he was chairman of the Government Warehouse and Postal Service Committees of the latter organization. He was a man of high ideals, exemplary character and fine tastes, being especially fond of outdoor sports. His business career has been characterized by industry, energy and ability, and was full of promise for the future.

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How to Proceed in Establishing a Fire Loss Claim Against the Insurance Companies.

Provision for Saved Goods—Inventory Practice—Merchandise and Freight and Drayage Accounts—Cash Discount Average—Preparing Loss Statement—Depreciation—Cash Valuation—"Total Loss"—Bad Bookkeeping—Accounts to Be Kept.

At the recent annual meeting of the Minnesota Retail Hardware Association John B. Lee, Jr., a fire insurance expert, who is familiar with conditions that prevail in the Hardware trade, read a comprehensive paper on the subject of "Bookkeeping and Fire Loss Adjustment." In view of the importance of the subject and the practical value of Mr. Lee's paper, we give liberal extracts from it below, which will doubtless be read with interest and instruction by Hardware merchants generally. After recommending care and caution in placing insurance and commenting on the co-insurance clause, Mr. Lee spoke as follows:

MR. LEE'S ADDRESS.

Let us now consider the question which more frequently arises in the minds of policy holders when they meet with a fire loss, "How shall I proceed in establishing my claim against the insurance companies?" Assuming that the subject of a loss is, say, a stock of Hardware and implements. Immediately after the fire your first business is to notify the insurance companies, either by letter or telegram. If any of the companies are represented by a local agent he will attend to the sending of notices to the companies for you.

This done, proceed to protect such of your goods as may have been saved during the fire from theft or further damage. If the quantity is large engage suitable space in another store building or vacant warehouse to accommodate them temporarily or until you have arranged for permanent quarters elsewhere.

Put the Saved Goods in the Best Order

possible by wiping each article, if wet, and further protect them against rust by application of oil to all bright metal articles, such as Tools and Cutlery, and after every precaution is observed to prevent further damage start then to separate the damaged from the undamaged goods and make a detail inventory of each at the regular cost price.

By attending to this part of the work at once you have acquired immediate knowledge of the amount of goods saved, the character and extent of the damage to them, and performed a service which every adjuster appreciates because it lessens his time and labor just so much in the adjustment of the loss.

Books of Account and Other Records.

Your next attention is to your books of account and other records upon which you must rely in establishing much of the proof of the amount of your loss. Assuming that you have allowed sufficient time for your safe to cool off after the fire remove your books and papers and proceed to get your accounts in shape preparatory to taking off a merchandise statement.

As all well regulated Hardware stores take an inventory at least once a year and keep the last one safe from fire with their other valuable documents, it is taken for granted that you are in this class and the last inventory of your stock is at hand.

A Word as to Inventory.

As all loss adjustments on merchandise stocks start with the last inventory taken, it is important to see that the amount of the same is correctly stated. If any goods are included that do not properly belong to stock, such, for instance, as store furniture and fixtures, tinner's tools, &c., the articles should be transcribed on a separate sheet to be deducted when the total is reached. It is well to check over the inventory to see that the cost of each item is correctly extended and that the footings of each page are correct.

The general practice among merchants is to inventory their goods at bill cost without any addition for freight

or cartage, and this is the right way. If your inventory includes a freight loading on each item, then the total must be reduced by the amount of freight added.

If a certain per cent. on the cost of goods is taken as the basis for the freight loading, then the total of the freight charge can be readily computed. The elimination of freight loading in inventories is essential in a loss adjustment, as will be explained later on.

Do not make any erasures or alterations in figures in your inventory book, but correct errors by marginal notation which may be summarized on a separate sheet.

Merchandise Account in Ledger.

The next step is a reference to the merchandise account in your ledger. Examine to see that all goods purchased and delivered into your store up to the time of the fire have been entered and posted to this account. Likewise see that all sales, up to the time of the fire, both for cash or credit, are duly entered.

Next comes the segregation of such items on the credit side of your merchandise account as represent goods returned to the jobbing houses, also all items on the debit side of merchandise account representing goods returned to the store by customers. Make a separate statement of these items and lay aside with other memoranda for presentation to adjuster when he arrives.

If you have charged merchandise with freight or express items these should be culled out and noted in detail on a separate sheet. The object of eliminating all items, such as the above, is to show the amount of goods actually purchased at gross or bill cost, since last inventory, together with net amount of goods actually sold at retail price for the same period.

If Purchases Have Been Entered

to the debit of merchandise account at net cost, or with cash discount deducted (which is a very unusual method), then the total amount of such deductions on all bills entered since the inventory must be shown. This can be done by reference to check stubs or to the original bills, if they have been preserved, and upon which the amount of discount generally shows.

If no accurate method of arriving at these figures is at hand, then the total deduction from such invoices must be approximated. When correct bookkeeping methods are employed, all merchandise received is charged to merchandise account in the gross amount of each invoice, and if a bill is discounted in payment the amount of discount is credited to discount account.

Freight and Drayage Account.

Following the analyzation of the merchandise account comes the preparation of freight and drayage account. See that all items of freight, express and drayage paid on goods bought since the last inventory are correctly shown, and you now have about all the information required to show the amount of stock on hand at date of fire.

But as it is necessary to reduce the amount of sales which are shown on your books at the retail selling price to invoice cost, you must resort, in the absence of any specific record showing the profit on each article sold, to the record of gross profits realized on sales of previous years, and from the merchandise account you make up a statement showing the average percentage of profit realized for each yearly period. To illustrate:

PROFIT STATEMENT FOR 1908.

| | |
|--|-------------|
| Goods on hand January 1, 1908, per inventory | \$10,000.00 |
| Total goods purchased during the year | 25,000.00 |
| Total | \$35,000.00 |

| | |
|--|-----------------------|
| Goods on hand December 31, 1908, per inventory | 12,500.00 |
| Cost of goods sold..... | \$22,500.00 |
| Merchandise sales for the year.. | \$27,500.00 |
| Cost of goods sold..... | 22,500.00 |
| Gross profit on cost of goods sold | \$5,000.00, or 22.22% |

Computing Preceding Years.

Extending the computation to the business of preceding years, say, three or four altogether, and taking an average of the percentage of profit for the entire period a fair, just and equitable factor is obtained for computing profits on the goods sold since last inventory. But to arrive at the amount of profit by this method requires an inventory each year as a beginning for the merchandise account, with proper record of all purchases and sales, and these records, if in old books, must be preserved along with the books in current use.

In the absence, however, of such data upon which to compute profit on sales, the percentage must be arrived at by some one of the various methods that adjusters are frequently forced to employ in settlement of loss claims, where all books and records are destroyed and which are more or less arbitrary in their application.

Cash Discount Average on Stock.

One more step is now necessary before the data for the adjustment is complete, and that is to run over your purchase accounts and ascertain a fair average of cash discount applicable to the invoice value of the entire stock. Some goods are sold net without discount, while on others the discount varies from 1 to 5 per cent., and even more. Take the stock as a whole and estimate the average rate of discount which would apply if you were to repurchase it from the jobbers at spot cash.

It doesn't matter whether you availed yourself of the discount terms on your purchases or not; it amounts in effect to a trade discount and therefore affects the cost of goods. As insurance is always cash, the companies are entitled to the same discounts, benefits and concessions that are open to the merchant in the usual course of his business, whether he avails himself of the opportunities or not. Usually the reason a merchant does not discount his bills is because his cash resources will not permit.

Drawing Up a Loss Statement.

You are now prepared from the data on hand to draw up a loss statement to see where you stand as the result of the fire. For purposes of illustration, suppose we take an imaginary case with arbitrary figures and follow it through to final results. The statement as presented would be something like this:

STATEMENT OF LOSS.

| | | | |
|---|------------|-------------|-------------|
| <i>Excelsior Hardware & Implement Company.</i> | | | |
| Fire of February 25, 1909. | | | |
| Stock on hand January 1, 1909, per inventory | | \$12,500.00 | |
| Deduct for errors and items improperly included..... | \$637.50 | | |
| Deduct for freight loadings..... | 375.00 | | 1,012.50 |
| Net inventory at bill cost..... | | \$11,487.50 | |
| Add merchandise purchases subsequent to inventory per books, at bill cost..... | \$2,500.00 | | |
| Less goods returned..... | 115.00 | | 2,385.00 |
| Total stock..... | | \$13,872.50 | |
| Contra: | | | |
| Deduct merchandise sales per books | \$4,325.00 | | |
| Less returned goods..... | 75.00 | | |
| Goods actually sold..... | \$4,250.00 | | |
| Less 20% gross profits on cost.. | 708.33 | | 3,541.67 |
| Stock on hand date of fire at bill cost..... | | \$10,330.83 | |
| Deduct cash discount on bill cost, average 2% | | 206.62 | |
| | | | \$10,124.21 |
| Add freight and cartage (based on percentage of amount paid on goods purchased for previous year, to obtain fair average), 5% | | | 506.21 |

| | | |
|--|-------------|------------|
| Stock on hand at net cost date of fire..... | \$10,630.42 | |
| Deduct depreciation, say 10%..... | 1,063.04 | |
| Cash value of stock date of fire..... | \$9,567.38 | |
| Deduct goods in warehouse undamaged per inventory after fire | \$525.00 | |
| Deduct goods saved from stock in store building per inventory. | 950.00 | |
| Total | \$1,475.00 | |
| Deduct 10% depreciation..... | 147.50 | |
| Cash value..... | \$1,327.50 | |
| Loss and damage to saved goods, as agreed..... | 65.00 | 1,262.50 |
| Whole loss and damage..... | | \$8,304.88 |

The Item of Depreciation.

Referring to the item of depreciation, it should be borne in mind that the insurance policy provides for the payment of indemnity on the basis of the cash or market value of the property destroyed or damaged. A stock that has been in trade for a number of years accumulates a certain amount of goods that are hard or almost impossible to sell. Furthermore, the value of a large part of the stock is depreciated by age, moisture, dust and handling, so that a charge of some percentage against its invoice value is right and proper to arrive at its actual or cash market value at the date of the fire.

A Fair Charge Would Depend on Conditions.

Just what would be a fair charge off for depreciation of a stock of Hardware and Implements is difficult to say, as each case must be treated separately and on its merits, after due consideration of all the facts involved.

For instance, a stock that is comparatively new would be worth more than one that is old. A stock owned by a firm that employs progressive and up to date methods in merchandising, keeps their stock fresh looking and clean at all times, allowing no dead or unsalable goods to accumulate, and exercises good judgment in buying not only goods that are salable, but at right prices, with plenty of capital to carry on the business, has a higher cash value on the shelves than a stock of similar proportions where contrary facts exist.

Therefore, the actual conditions must be ascertained affecting each particular stock before an intelligent opinion can be arrived at, fixing its true cash value at a given time.

Firms with Limited Capital.

It is apparent that a firm that has been doing business on a limited capital and drawing on its credit resources with the jobbing houses to the fullest extent pays relatively higher prices for its goods. This is but natural, as the jobbers must have some return besides ordinary profits to compensate them for the capital invested in their customer's business. Therefore, in a case like this some allowance must be made when considering the question of depreciation of the difference between the prices paid for goods on a credit basis and what they could have been bought for on a cash basis.

As insurance is always cash and each loss adjustment contemplates the replacement of the property destroyed, the insurance companies manifestly are entitled to the same prices and discounts as are obtained by the closest cash buyer of relatively the same kind and quantity of goods. You have, therefore, arrived at the point of knowing the amount of goods on hand at time of fire at invoice cost plus freight and less cash discount, and now you must rest until the adjuster arrives and assists you in making up your statement to this point.

Freight and Cartage Allowance.

Before proceeding further I may say that freight and cartage allowance to cost of goods is always made at the end of a statement, when the amount of merchandise on hand at time of fire at invoice cost is ascertained. An amount is then added which will cover the cost of transporting the same from the markets to your store.

Adding freight to purchases or allowing it to remain as a charge to merchandise in an inventory, would produce an erroneous result in the loss computation, unless all other factors involved therein were changed to correspond.

The records of your business would show what amount you paid for freight and cartage on, say, a year's purchases, a fair, average basis, the percentage thus ascertained should be a reasonably accurate factor for use in determining the freight and cartage charge to be added on the cost of the goods on hand at the time of the fire.

Cash Value of Stock on Hand Occasions Much Argument.

Your next step, so the adjuster will inform you, is to arrive at some agreement with him on the cash value of the stock shown to be on hand. Then comes argument, and plenty of it. Like the great majority of loss claimants, you perhaps would take the position that yours is a better stock than your neighbor's; that it was well bought, well kept up, no dead stock was allowed to accumulate; in short, it was one of the best stocks in the whole State of Minnesota and worth absolutely par—100 cents on the dollar!

But we leave this question to be threshed out with the adjuster, who will be guided in his judgment by all the circumstances of the case, and endeavor to reach an agreement at some figure fair and equitable to all concerned.

Stock Stored Elsewhere Than in the Store.

Many Hardware stores have part of their stock stored in separate and detached warehouses which oftentimes are not involved in the fire that destroys the main stock. In such cases it becomes necessary to inventory the goods contained therein immediately following a fire, which inventory becomes a part of the loss statement as shown above.

Having Already Invoiced the Saved Goods

and put them in the best possible order, it only becomes necessary to agree with the adjuster on the damage to them to render the loss statement complete, showing the amount of your claim against the insurance companies in the present instance, providing you have enough insurance to cover it to be \$8304.88. This amount plus the saved goods which belong to you equals the cash value of the stock at the date of the fire, which in the statement shows as \$9567.38.

In Cases Where a Fire Damages Only a Small Part

of a stock it is sometimes possible to reach an adjustment based on estimates of value of the goods affected and thus save the time, labor and interruption to business which a detailed inventory and a book statement would entail. Where goods in a separate warehouse burn and the loss is more or less complete, unless some running stock record is kept showing approximately the amount of goods on hand, it becomes necessary to invoice the entire main stock to ascertain the value of that part involved in the fire.

Proofs of Loss.

Having reached an agreement on the amount of the loss, the adjuster apportions the same to the various policies covering, according to the amount written by each, and makes up what are called "proofs of loss," setting forth the principal facts in relation to the claim, which you then subscribe to under oath, after which they are sent to the respective insurance companies for payment.

Consideration for the Adjuster.

Adjusters are quick to appreciate any time and labor saved in connection with a loss adjustment, and the assured, if he wants to get on the right side of an otherwise cranky or ill-tempered representative of the company, and we all have such spells once in a while, should anticipate the information wanted and have the details of a book statement, together with all necessary invoices of saved goods, prepared and at hand when he arrives.

Nowadays the demands upon an adjuster's time are many and conservation of work is important. On the other hand, the assured wants his loss adjusted as quickly as possible, as time counts with him also.

A False Idea as to Saving Stock.

Now, to consider some of the side lights in connection with fires and fire loss adjustments. It is commonly understood by a great many who should be better informed that if you save any goods from your stock during a

fire their value will be deducted from the insurance—a most absurd idea, which is often responsible for heavier losses than would otherwise accrue. I have already shown how saved goods are treated in a loss adjustment, which should afford sufficient proof of the foolishness of such reasoning.

Another common belief among policy holders is that after a fire nothing remaining of the insured property must be touched until the adjuster arrives. If the persons possessed of such opinions would take the pains to consult their policies they would find a clause reading something like this, "And the insured shall make all reasonable effort to save and protect the same."

A fire comes along and burns the roof off your building, exposing your stock to further damage by the elements. Would you sit calmly by waiting for the adjuster to come and tell you to repair your roof, or take other measures to protect your stock from damage by rain, or would you do the sensible thing required of you by the policies, and act at once without advice as common sense would tell you? The best advice on all such matter is to do as you would if you had no insurance.

One of the Most Aggravating Situations

with which an adjuster meets upon arriving at the scene of a loss is to find evidence of gross neglect on the part of the assured in protecting that which remains of his property after the fire. In nine cases out of ten the man is insured right up to the limit, and if he had no hand in the setting of the fire, fraud, or attempted fraud, on the insurance companies will manifest itself when he comes to present his claim. Honest, conscientious men do not attempt to increase the damage to their property either directly or by gross neglect, but strive to lessen it in every possible way.

The Honest Man Has Nothing to Fear

In the outcome of his claim if everything has been done on his part that prudence and reason would suggest. Adjusters are prone to be liberal with the man who shows honesty and good faith in all matters pertaining to his loss, while the contrary attitude is invited by the man whose sole purpose in case of loss is to get as much as he can out of it, regardless of the relative facts or the conditions of the policy.

My observation, however, is that special trade mutual insurance companies are troubled far less with dishonest loss claimants than companies doing a general business, due in large measure no doubt to the intimate acquaintance of the officers with the applicants for insurance and the business history of each, which enables them to select the good and reject the bad.

Significance of "Total Loss."

Another point upon which there appears to be a misunderstanding with a few and that is the term "total loss." This is taken to mean that if a stock of goods is totally destroyed and no part of it has been saved the entire insurance, no matter what amount, is collectable without other formality than a formal presentation of claim. How such strange and illogical beliefs become current among intelligent people is hard to understand, but they exist and must be combated.

Precisely the same processes in proving a loss under such circumstances must be undertaken as with one involving only a partial loss to the stock. In any case, the cash value of the stock at time of fire must be ascertained and the loss on the same determined, then, if the amount of insurance is less than the amount of loss, the term becomes applicable as "total loss to insurance."

Bad Bookkeeping Causes Most of the Trouble.

We may now pass on to a consideration of bookkeeping in its relation to fire loss adjustments. Ask any adjuster of experience what, in his opinion, causes the most trouble in connection with loss adjustments on mercantile stocks, and he will answer, bad bookkeeping. In this connection also bad bookkeeping may mean keeping no accounts except those against customers covering credit sales. Ask a merchant who is running his business without books why he doesn't keep a record of his transactions and he will tell you it is too much bother, and doesn't do any good, anyhow. He has no partners

in his business and his credit transactions are small, so what's the use?

It is hard to conceive how any man in business these days, no matter how small his business may be, can get along or succeed without some record of his transactions, however crude or unsystematic, yet a great number of such cases can be found on every hand. Under such circumstances it seems to me that things are reversed, and the business runs the man—runs him sooner or later into some other occupation for which he is better fitted.

A Moral Obligation.

A good accounting system is to any business what a compass is to a mariner at sea. It shapes his course and shows him at all times where he is going. To the intelligent, progressive merchant good bookkeeping is an absolute necessity. Its observance spells success, its disregard may mean failure.

But without going into an extended discussion upon the merits of any particular system or systems I want to impress upon your minds the necessity of keeping records of your daily business transactions, because of their importance in connection with fire loss adjustments, if for no other reason.

There is a moral obligation resting upon each and every one of you carrying fire insurance to furnish to the companies competent and sufficient proof of any loss by fire which you may be unfortunate enough to sustain, and any man unwilling to fulfill this obligation should be denied the benefits of fire protection. It makes no difference how the records are kept, so long as they are made and preserved.

Care in Preserving Records.

But whatever records you make see that they are preserved from destruction by fire. I am not talking in the interest of any iron safe concern when I urge the purchase by those of you not already supplied of an iron safe of sufficient capacity to accommodate all your books, records and papers. Every storekeeper should have a safe.

Taking books home with you every night is a wise precaution in the absence of a safe, but you might forget them some night. Those who have safes too small to hold all their books should get larger ones. Many a loss claimant has been embarrassed in a settlement because some important record which the safe would not accommodate was destroyed. Therefore, look well to the security of your records. What is the price of a good sized safe in comparison with the loss of valuable records?

Accounts to Be Systematically Kept.

For purposes of a loss adjustment on your stock of merchandise accounts under the following heads should be systematically kept.

MERCHANDISE.—To which is charged all goods received into your store at invoice costs, and to which is credited all goods leaving your store at selling price.

MERCHANDISE PURCHASE ACCOUNTS.—Kept with each firm from which you buy goods, to which should be credited the amount of each invoice of goods received, and to which all payments on account of such merchandise, discounts and goods returned should be debited.

CUSTOMERS' CREDIT SALES ACCOUNTS.—Comprising accounts opened with each customer to which are debited all goods sold on credit, and to which all payments on account or goods returned are credited.

CASH SALES.—The amount of each day's cash sales should be kept in some form, preferably in the cash book. The total of each week's or month's sales only may be posted to merchandise account in ledger if desired, but keep the detail for reference if necessary.

FREIGHT AND DRAYAGE.—Keep a separate account of all such items in your ledger.

Consigned or Commission Merchandise.

If you handle consigned or commission goods keep an account of the same in a separate book showing in detail items received and from whom on one page, and the items sold on the other. Then in your general ledger open an account entitled "Consigned Merchandise Sales," and credit to this account all goods of such description.

Don't include consigned goods sales, either for cash or credit in your regular sales. The reasons for this is that consigned goods do not belong to you, and are usually

insured against fire by the owners, in the form either of a blanket policy covering many locations, or specifically while in your own building.

In any case, your policies would not be liable for any loss on them unless specifically mentioned, and then only in the event of your being legally liable for loss on them under the terms of a written contract. In this connection it should be understood that consigned goods have no place in your regular inventory.

Tin Shop Account.

If you have a tin shop in connection with your business making articles for stock, or do outside work, such as setting up and repairing Furnaces and Stoves, employing help for the purpose, you should have a ledger account entitled "Shop and Repairs Accounts," or some similar heading, and to this account charge all material furnished at cost price and wages of shop employees.

Credit the account with all goods manufactured for stock at cost of material and labor (debiting merchandise accordingly), together with all amounts received, or due for repair or other work representing the product of shop labor.

By keeping a separate account of shop and labor transactions you will have a better check on this department of your business and know whether it is making or losing you money, and at the same time in the event of loss you will not be chargeable with sales of merchandise which do not belong there.

I have enumerated the essential accounts only required in connection with loss adjustments, which you will observe have to do with showing the amount of value of merchandise coming into your store at cost and the amount or value going out at the selling price.

A Suggestion as to Inventory.

Now, to determine the cost of the goods sold, it is essential that you take an inventory at least once each year and balance your merchandise account to show the gross profit on goods sold as previously illustrated. All other impersonal or representative ledger accounts under the broad classification of expensive accounts have to do with the cost of conducting the business and do not affect the value of the goods sold.

Now, a suggestion as to method of taking an inventory. I have frequently been confronted with a statement by the assured while arguing the question of depreciation that he had already depreciated many of the items of his inventory when it was taken, but satisfactory proof in substantiation of the statement in the inventory itself is rarely afforded. What I would suggest is that in invoicing goods susceptible to depreciation for any cause, show the amount of the same at invoice cost on the inside, then deduct from this the amount to be charged off in depreciation and carry the net amount to the regular column. Thus the actual amount deducted from regular cost price of the goods inventoried may be shown by reference to each page and allowance in the adjustment made accordingly.

American Patents Abroad.

Position of American Hardware Manufacturers' Association.

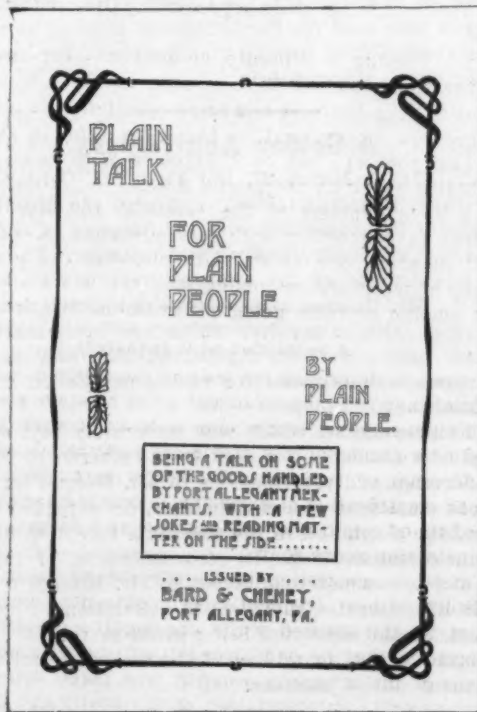
AT the Memphis convention, last fall, the American Hardware Manufacturers' Association adopted resolutions urging the authorities at Washington to take action for the protection of American patents, suggesting in this connection that many foreign countries have laws requiring that patents issued to American inventors shall be worked in the countries granting them. Robert Garland, Pittsburgh, president of the association, is now addressing a letter to the members calling attention to the clause in the Payne tariff bill relating to this subject. This clause is referred to by Mr. Garland as furnishing the desired protection and the members are requested to use their influence with their Senators and Representatives, urging the passage of this section of the bill.

PUBLICITY METHODS OF A PENNSYLVANIA FIRM.

House Organ—Adding to the Mailing List—Post Card of Possible Wants—Giving Knife Sharpeners Away.

Bard & Cheney, Port Allegany, Pa., who are very energetic and resourceful in canvassing for business through the medium of printed matter circulated by mail, have lately commenced the publication of a very readable house organ which is to be issued monthly. The first issue, coming out late in February, consisted of 16 pages about 9 x 6 in., but the size and scope of the pamphlet will be enlarged as occasion requires. *Plain Talk* is the title and as appears from the front cover it is designed "by plain people for plain people."

The inside of the front cover contains an announcement in regard to the business of the firm and the ser-



Front Cover of Bard & Cheney's Store Paper.

vice it is prepared to render to its customers. Wit and humor furnish the first page of the reading contents, which is followed by a talk to customers on the importance of getting in orders early. Succeeding pages are occupied with store advertising relating to such lines as Grain Drills, Harvesters, Land Rollers, Plows, Cream Separators, Harrows, Sewing Machines, Bee Supplies, Potato Machinery, &c., interspersed with reading matter. Several pages at the beginning and end of the booklet are occupied with announcements by Port Allegany merchants in other lines of business.

Five Cents Offered for Mailing List Names.

While the firm already has an extensive mailing list it is desirous of adding thereto, and with this in view the back cover contains an offer of "5 cents each for new names," as follows:

We want more names for our mailing list—names of parties who buy goods in Port Allegany or who would if they could buy to better advantage than where they are now trading. We want only names of the head of the family, or whoever does the buying. If you can tell whether or not the person owns his farm or house it will be appreciated but not necessary. We do not want two names of people who live together.

Make out a list of all the names you can think of, getting the correct address where their mail goes to—this is important—bring it to our store. We will go over our list with you, and for every name that you have that we do not have we will pay you 5 cents.

A Circular.

Accompanying the booklet was a circular calling at-

tention to this new departure on the part of the firm and inviting criticism and suggestions. It read as follows:

Here is our idea of what you want in the line of advertising. If you like the idea, or don't like it, tell us so on the front side of the postal inclosed—and on the back of it tell what goods you are interested in. You will not have to stamp it—just put your name and address, *be sure and do that*, and put a cross like this (X) opposite any goods you want more information about. You won't have to buy unless you want to, and whether you buy from us or some one else it will be worth your while to find out what we have to say.

Read the advertisements of the other merchants who are advertising with us. Go in and tell them that it is a good way to advertise—it will help us to get out a better book next time. Will you do this?

The next issues will have more reading matter of interest to you in them. Write us or tell us how we can make it better, and what you want in it. The more you are interested the better it will be.

Help some of the children to make a few nickels. See our offer on the back cover of the book. We want more names on our mailing list.

Yours for more business,

BARD & CHENEY.

P. S.—If you keep bees send in for our 1909 catalogue. It is complete, with prices.

Stirring Up Business by Post Card.

The back of the postal card referred to is reproduced herewith. A card somewhat similar in character was sent out a year ago and proved effective in drawing out inquiries and orders. Only a short time since one of the cards mailed at that time was received from a farmer noting that he was in the market for a Mowing Machine and Rake and perhaps a Sewing Machine.

This budget of printed matter was sent out to 700 farmers on the firm's mailing list.

Four Per Cent. Coupon for Cash Sales.

Some months since Bard & Cheney installed an elaborate Cash Register, and with a view to encouraging cash sales adopted the practice of giving out a rebate coupon with each cash sale. This coupon is worth 4 per cent. in trade. Customers are advised when they have coupons representing \$10 or more in purchases to bring them to the store and 4 per cent. of the amount will be allowed in trade for any goods in stock. The coupons will be redeemed at any time. On single purchases of \$10 or more 4 per cent. reduction for cash will be made at the time of the sale. The public is expressly reminded that this coupon offer does not apply to goods sold on contract or to any purchase which is not paid for the same day the goods are ordered.

Every Family Remembered with a Knife Sharpener.

But Bard & Cheney remember their customers in other ways than by booklets, mimeograph circulars, newspaper advertisements, &c. Just before the opening of the holiday season last December as a mark of appreciation of their patronage their customers were informed that 500 Kitchen Knife Sharpeners were awaiting them at the store. While they lasted every family was presented with one of the Sharpeners with the compliments of the firm. None was given to children without a note from the parent.

The "Red Book" is the title of a pamphlet issued by A. M. Matthews & Co., Orange, N. J., who handle an extensive line, including Hardware, Paints, masons' materials, Seeds and Fertilizers, lumber, coal and wood, grain, hay, &c. It presents a list alphabetically arranged of many of the goods carried in stock. While not a full or complete index of their entire stock it will doubtless be

| Date _____ 1909 | |
|---|-----------------------|
| Bard & Cheney, Port Allegany, Pa. | |
| Gentlemen: Let me know more about the goods that I have checked: | |
| Plows..... | Hay Carriers..... |
| Harrows..... | Gas Engines..... |
| Mowing Machines..... | Sprayers..... |
| Horse Rakes..... | Potato Machinery..... |
| Yulders..... | Manure Spreaders..... |
| Bladders..... | Bee Supplies..... |
| Land Rollers..... | Stoves..... |
| Grain Drills..... | Cream Separators..... |
| Cultivators..... | Sewing Machines..... |
| Bag Goods..... | Insulators..... |
| Paint..... | Washing Machines..... |
| Other goods which might be in our line..... | |
| It is understood that this does not bind me to buy—simply that I would like to know more about these goods. | |
| Name..... | |
| Correct Address..... | |
| Write any message on other side. | |

Post Card Suggesting Possible Wants.

of value to their customers as a general list. On the back of the booklet is the suggestion that the firm will be glad to get any goods called for not comprised in their stock.

Price-Lists, Circulars, Etc.

Manufacturers in Hardware and related lines are requested to send us copies of catalogues, price-lists, etc., for our Catalogue Department in New York; and at the same time to call attention to any new goods or additions to their lines, of which appropriate mention will be made, besides the brief reference to the catalogue or price-list in this column.

DRAFER & HALL COMPANY, Middletown, Conn., catalogue and price-list of the Patented Hayes Lock Snap Hook, both loop and round eye.

BUENS & BASSICK COMPANY, Bridgeport, Conn.: 16-page illustrated catalogue of Feltold Furniture Casters in a variety of styles, both plain and ball bearing, and line of Cast Brass Leg Sockets for furniture.

LUDLOW-SAYLOR WIRE COMPANY, St. Louis, Mo.: Catalogue No. 41 relating to the Perfect Double Crimped Steel, Brass, Copper and Bronze Wire Cloth for mining and concentrating plants and all other purposes. Illustrations represent Wire Cloth Machinery used for crimping cloth, Looms for manufacturing Window Screen Cloth, &c.

H. F. THOMPSON BOAT & PATTERN WORKS, Decorah, Iowa: Illustrated pamphlet devoted to Steel Boats, including 1909 runabout No. 23, and others for which full size paper patterns can be obtained.

IDEAL MFG. COMPANY, New Haven, Conn.: Handbook No. 19, showing Reloading Tools for rifles, pistols and shotguns, and other specialties. Improvements have been made in various articles and new goods have been brought out since the company's No. 18 catalogue was issued.

LASHER MFG. COMPANY, Davenport, Iowa: Catalogue showing an enlarged line of Kitchen and Hardware Specialties, including the Paxton Roaster and Baker, Pot Cover Display Cabinet, Plate Scraper, Tea and Coffee Pot Repair Knobs, Cake and Doughnut Cutter, Masher and Beater, Combined Grater and Slaw Cutter, Combination Dipper, Combination Utensil Holder, Adjustable Can Opener, Fruit Jar Wrench, Broom Holder, Stove Pipe Thimble, &c.

NATIONAL ARMS & STAMPING COMPANY, Philadelphia, Pa.: Confidential price-list of boys' and girls' Roller Skates. The company's Skates are known as the Nasco, a name formed from the initial letters in its title.

CULLMAN WHEEL COMPANY, 1018-1026 Greenwood Terrace, Chicago, Ill.: Catalogue No. 7, devoted to Steel Chain Sprockets for automobiles, Hub Sprockets, Cullman Spur Gear Differential, &c. For the convenience of its patrons the company carry in stock Baldwin, Diamond and Whitney Chains.

DETROIT COPPER & BRASS ROLLING MILLS, Detroit, Mich.: Catalogue relating to Brass, Bronze, Copper and German Silver in Sheets, Rolls, Plates, Wire, Rods, Seamless and Brazed Tubing; also Copper Bottoms, Pits, Flats, Brass Molding, Channel and Angle Brass, Bare Copper Wire, Telephone and Trolley Wire.

BUTLER BROS., Chicago: "Our Drummer" catalogue for April, in which special attention is given to House-keeping Goods, Sporting Goods, Farm and Garden Tools.

HAMMACHER, SCHLEMMER & Co.: Revised discount sheet No. 1, relating to catalogue No. 262, with the latest price-lists on Carriage Bolts, Cap and Set Screws, Coach Screws, Stove Bolts, Spring Cotters, Leather Belting, Emery Paper and Cloth, Galvanized Ash Cans, &c.

MOSS MFG. COMPANY, Baltimore, Md.: Illustrated catalogue No. 10, referring to Sash Frame Pulleys, Sash, Door and Blind Hardware, &c.

TROW & HOLDEN, Barre, Vt.: Well arranged and handsomely illustrated catalogue covering an extensive line of Granite Working Tools.

EMERSON, SMITH & Co., Beaver Falls, Pa.: Sawyer's OWD Book for 1909-10, a booklet referring to Saws and containing much valuable information relating to them.

Higher Fencing.

IN a recent issue of "American Fence News," a booklet referring to Fencing, issued by the American Steel & Wire Company, Chicago, reference is made to a tendency which has been observed in the trade toward erecting higher fences. It is stated that years ago when Woven Wire Fence was first put on the market the farmers did not know just the height required and, naturally purchased as low a Fence as they thought would do. It was a common practice to take off the lower strands of an old Barbed Wire Fence and place them at the top of the posts, filling in the bottom with 26-in. Woven Wire Hog Fence. The company states that the tendency is now changing, and stock growers have found it better to use the Wire Fence high enough so that it is only necessary to put one or at the most two strands of Barbed Wire at the top. They regard it as important that the Fence should be safe as well as hog tight, and require that the woven web extend high enough so that horses cannot get their feet into the Barbed Wire. In short, the latter is only used for the purpose of keeping horses and other animals from leaning over the top of the Fence and damaging the woven fabric.

A Golden Anniversary.

SATURDAY, March 27, the Plymouth Cordage Company, Plymouth, Mass., celebrated the fiftieth anniversary of the connection with the company of Glendon F. Holmes, the present treasurer and manager. The officers and stockholders of the company have a very high regard for Mr. Holmes, and a thorough appreciation of his long and faithful service, which has been marked by unusual ability and far sighted wisdom, and made the anniversary an occasion for giving expression to these sentiments.

The programme, which was elaborately printed, consisted of a dinner at 2 o'clock in the afternoon, followed by addresses and presentations to Mr. Holmes on behalf of both employees and stockholders, an extended inspection of the plant, and in the evening a reception followed by music and dancing. In commemoration of the occasion and by way of compliment to Mr. Holmes a sketch of his life was also published in a handsome illustrated booklet, special attention being given to the part which he played in the upbuilding of the company and the development of its business.

Geuder & Paeschke Mfg. Company.

COINCIDENT with a change of corporate name from the Geuder & Paeschke Mfg. Company to the Geuder, Paeschke & Frey Mfg. Company, the capital stock of this organization has been increased from \$150,000 to \$1,000,000. The enameled ware plant operated by this company is to be increased by the erection of a new three-story structure 200 x 200 ft. in size, at a cost of about \$50,000. The additions contemplated will spread the plant over four city blocks, three of which are now occupied by the various departments.

Besides the Milwaukee works, which employ about 1000 persons, the company maintains a large warehouse in Chicago, now located at 53 Michigan avenue, but which is soon to be moved to Ohio street between Kingsley and Orleans streets to obtain better railroad facilities. Property has been secured at this point upon which a six-story structure is to be erected.

THE PLYMOUTH CORDAGE COMPANY, Plymouth, Mass., has issued the first of a series of booklets entitled "Plymouth Twine News," designed to give information of interest and value regarding Plymouth Binder Twine. In an article headed "Twine Conditions for 1909," there is an extended discussion showing the present favorable market position of Manila Twines in comparison with cheaper grades and presenting arguments favoring the use of the company's product. The booklet is illustrated with a view of the company's factories, scenes in the production of Raw Hemp, &c.

WOOSTER HARDWARE COMPANY.**Thirty Days' Special Sale.**

Success in the Past—Two Hundred Dollars for Good Roads—Advertising the Sale—Test of the "No Canvasser" Proposition.

DURING a number of years the Wooster Hardware Company, Wooster, Ohio, with branch store, opened some months since at Orrville, have held each spring a special sale lasting three days. For some time prior to the sale it was widely advertised through the local papers and by the distribution of circulars by mail, so that when the eventful days arrived visitors in large number from all parts of the territory covered by the company made their call at the store. Here no effort was spared by the members of the firm and their salesmen to interest and entertain them. In addition many of the manufacturers whose lines of Implements, Vehicles, &c., were handled embraced the opportunity to send their own salesmen to help out the home talent by giving demonstrations of the special features and merits of their goods, and co-operating in every way possible to make the occasion a marked success.

The event met with satisfactory public support from the start, and with the enlarged enterprise and experience of the firm each year has witnessed a distinct increase in popular favor.

One Whole Month of Sales Days.

This year with the success of the past to spur them on to new endeavors the members of the firm have reached out boldly, and instead of the usual three days' session have planned for a whole month of "Advertising and Sales Days," as they are aptly designated. The month began last Thursday, 18th ult., and will end on Saturday night, April 17.

For several years past a Whip has been given to visitors as a memento of the occasion, but this year a more substantial offer is announced. Three Ohio manufacturers, the Gerstenslager Company, manufacturer of Vehicles, Wooster; the Troy Wagon Works, Troy, and the Wooster Machine Company, Wooster, have contributed \$200, which sum will be devoted to improving the highways of three rural free delivery routes in the county.

How the \$200 for Better Roads Will Be Distributed.

Of course, this money will not be spent indiscriminately or where it might not be appreciated, and in order to determine just what highways should be improved the firm will register the name and number of rural route of every one—men, women and children—who visit the two stores during the special sales month now on. The three most popular routes, as shown by the recapitulation after the termination of the sale, will be awarded the money, the sum of \$100 being spent on the rural route showing the largest number of names on the register; \$70 on the second largest, and \$28 on the third. These amounts represent the values respectively of the Rubber Tired Buggy made by the Gerstenslager Company, the Farm Wagon made by the Troy Wagon Works, and the Land Roller made by the Wooster Machine Company.

It is expected that this public spirited and very sensible offer will stir up a good deal of rivalry between the residents on the different rural routes, and that as a result the sale this year will attract more attention than ever before.

In Advertising the Sale

In the country papers, which was begun in February, the first announcement, which doubtless aroused a good deal of curiosity, was as follows:

| | |
|---|---|
| B | R |
| N | C |

This appeared here and there in the reading contents of the different papers and also in the following ad. which occupied a 5 in. two-column space:

Our Twelfth Annual
Advertising and Sales Days

WILL BE FOR

B _____ R _____
and
N _____ C _____

WOOSTER HARDWARE CO.
Wooster, Orrville.

Subsequently the key to the letters appeared as follows, being repeated in the reading contents as in the case of the first announcement:

Better Roads. No Canvasser.
Wooster Hardware Co.

In the same issues a large advertisement, occupying three full columns, appeared in which particulars were given in regard to the sale. Here it was announced that during the 30 days the firm would do no canvassing, and would thereby make a thorough and practical test of the "No Canvasser" proposition. In this connection the statement was made that

it costs nothing to register [during the sale] and you will be under no obligations to make even the slightest purchase. If our prices for the well established line of implements and buggies we carry, backed by our twenty-six years of honest effort in the business, will not be strong enough inducements for prospective customers to leave their orders with us for their 1909 requirements, then no salesman for the Wooster Hardware Company will be allowed to urge any customer to buy against his or her will. It is the talkative time killing canvasser and his burdensome expenses we want to get rid of.

This large advertisement was also reproduced in circular form and mailed with other advertising matter to 5000 addresses. The various circulars thus distributed enumerated a few of the special prices which will be in effect during the sale.

It is needless to add that the unique manner in which the sale was brought to the attention of the public called forth a number of commendatory references from the newspapers themselves, which operated still further to advertise the sale.

THE MOSCIP-BUCHNER SALES COMPANY, corner West Water and Sycamore streets, Milwaukee, Wis., has been recently organized to handle building specialties. It has secured agencies for the sale of Hardware lines from a number of prominent manufacturers, including Stowell Mfg. & Foundry Company, McCray Refrigerator Company, Terrell's Equipment Company, American Weather Strip Company, Whitner Two Rope Safety Company and Gardner Sash Pulley Company. Robert Moscip, president, was formerly connected with the first named interest, while Frank Buchner, secretary and treasurer, was for a number of years engaged with the Philip Gross Hardware Company, Milwaukee, in its Builders' Hardware department.

LEONARD B. GAYLOR, manufacturer of the Gaylor automatic stropper for safety razors, formerly at Allston, Boston, Mass., has removed to Stamford, Conn., where all communications should now be addressed.

P. W. WOETH, Kankakee, Ill., has sold his Hardware stock and business to Jeffers & McCune, who will succeed him.

Ansonia Alarm Clocks.

The Ansonia Clock Company, 99 John street, New York, has just put on the market a new alarm clock, two views of which are presented herewith. It is made in

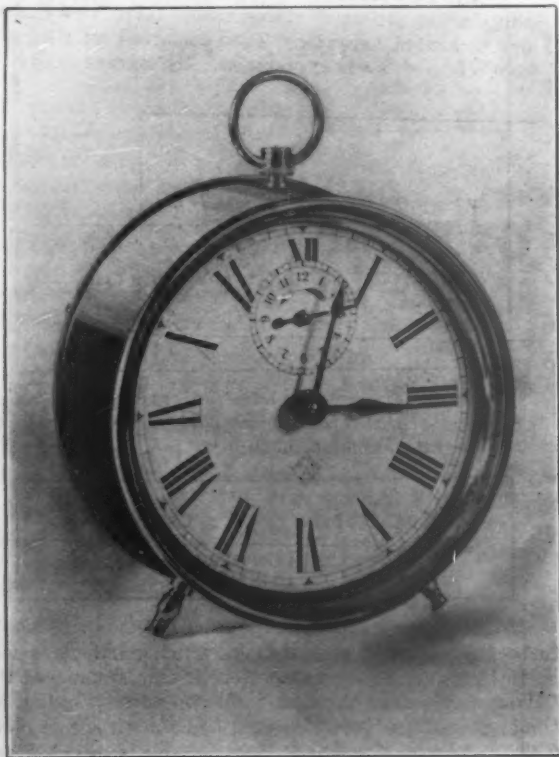


Fig. 1.—The New Ansonia Clock, Front View.

two sizes, 4-in., called the Startle, and 5-in., called the Signal. They are round nickel clocks, well finished and present an attractive appearance. A special feature is the large bell on the back, as illustrated, which has a loud, clear tone. By a convenient lever on the back, Fig.



Fig. 2.—The New Ansonia Clock, View of Back.

2, the clocks can be set for a repeating alarm or a long alarm, and there is also a switch to shut off the alarm entirely. The price of the clocks is moderate, but their quality is said to measure fully up to the standard of this company's product.

Ready Mixed Paints.

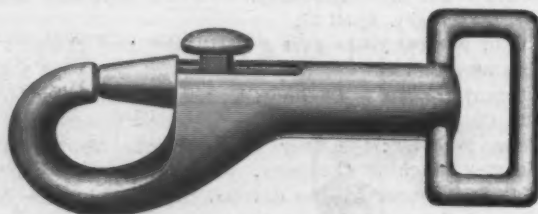
The Hazard Lead Works, Inc., with factories at Russell street, Brooklyn, N. Y., and Hazardville, Conn., is putting up its ready mixed paints in 1-gallon cans specially for the hardware trade. The list includes six desirable colors for body and trim, and the company states that they are adapted for painting buildings of all kinds, wood or metal. The company is making a special introductory offer of 50 1-gallon cans, any assortment of shades, for \$30. Color cards and descriptive matter will be sent to merchants on application.

Double Wire Splicing Clamps.

The M. W. Robinson Company, 79 Chambers street, New York, has put out a line of double splicing clamps or wire connectors. They are made in Nos. 15, 16 and 17, 9, 10 and 10½ in. long. No. 15 has four holes for Nos. 8, 10, 12 and 14 wire and spaces for 10, 12 and 14 sleeves. No. 16 has five holes for Nos. 6, 8, 10, 12 and 14 wire and spaces for 8, 10, 12 and 14 sleeves, and No. 17, four holes for Nos. 4, 6, 8 and 10 wire and spaces for 8 and 10 sleeves. They are drop forged from tool steel, tempered and well finished with polished heads, and handles finished in oil. They are packed singly in boxes and weigh 15, 23 and 22 oz. in the order described.

Hayes Lock Snap Hook.

The Draper & Hall Company, Middletown, Conn., has put on the market the Hayes patented lock snap hook, here illustrated. The feature of the snap is that it locks automatically, requiring both a downward and backward movement to unlock and release the catch. It is made



Hayes Lock Snap Hook.

with both loop eye, as shown, and round eye, for rope, finished in X C plate. The loop eye style is made in 10 sizes, from ½ to 2 in., inclusive, and the round eye in ½, ¾ and 1 in. sizes, all packed 1 gross in a box. The company is also using the hook in connection with horse ties having 10 ft. of rope, cattle ties with 8½ ft. and halter leads with 6½ ft. of rope, fitted with jute and sisal rope of ½-in. diameter.

Improved Allwin Iceless Refrigerator.

The Gale Mfg. Company, Galesburg, Ill., is now making in improved form the Allwin iceless refrigerator formerly made by the Allwin Refrigerator Company, which it has succeeded. The improved refrigerator is fitted with hoisting mechanism that is exceedingly simple and conveniently placed. It consists of a geared windlass operated by a hand crank which raises and lowers the refrigerator, and differs in this respect from the former type, which was actuated by a vertical lever connected with the gear mechanism, which was placed underneath the platform instead of being attached to an upright post, as in the new model. The refrigerator, which is cylindrical in shape and made of galvanized steel, is lowered into a well, cistern or a special bore in the ground by the two parallel vertical rods, which serve as guides. To insure a steady, even movement of the refrigerator case, the lifting cable is run through two pulleys at the bottom and a small cable attached to the top of the refrigerator and connected to the door in the platform automatically closes the latter when the receptacle is lowered. When elevated above the platform it is securely held in position at any height desired by a

ratchet. The windlass crank, being easily removed, serves as a key, since without it the refrigerator cannot be raised above the platform nor can the circular door in the platform be opened. Another feature introduced to provide circulation to purify the air in the refrigerator well is a pipe inserted at the foot of the upright post through a 2 in. opening. The extent of circulation thus secured depends upon the length of pipe used. The casing of the refrigerator is 9½ in. in diameter and is made water tight at the bottom, so that if by accident any of

the light. The lantern is constructed of IX charcoal tin, and its workmanship throughout is alluded to as being the very best.

Folding Razor.

John D. Case Sons & Co., Kane, Pa., are putting on the market the new folding razor, three views of which are presented herewith. It is described as a high grade tool made of the best material. Its feature is that it can

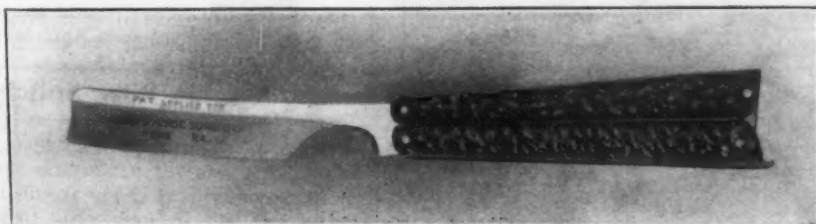


Fig. 1.—Folding Razor, Locked Open.

its contents should be spilled they cannot drip into the well. All of the fittings of the equipment are completed at the factory, so that it may be easily installed by any one who can cut a hole in the floor or platform and screw down the door frame upon which the windlass post is mounted. Space is provided in the interior of the refrigerator for four removable shelves, which are 15 in. in diameter. The guides are regularly made to provide for a depth of 8 ft. below the floor or platform, but if desired they can be furnished in any length at a slight additional cost.

New Features of Norleigh Diamond Lanterns.

The accompanying illustrations represent some of the new features of lanterns offered by the Norvell-Shapleigh Hardware Company, St. Louis, Mo.



Fig. 1.—Removing Globe of the Norleigh Lantern.

In Fig. 1 is shown the method of raising the dome and tilting the globe forward, preparatory to its removal. The wood ball handle is shown in Fig. 2, also the cold blast lifting and lighting device. The bottom of the lantern is double seamed, not soldered, the fount is exceptionally large, retinned and thoroughly air tested for leakage. The size of the oil hole is referred to as of extra size. Another feature of the lantern is the patented wind shield in the dome, to prevent even the strongest gust of wind

The wood ball handle is shown in Fig. 2, also the cold blast lifting and lighting device. The bottom of the lantern is double seamed, not soldered, the fount is exceptionally large, retinned and thoroughly air tested for leakage. The size of the oil hole is referred to as of extra size. Another feature of the lantern is the patented wind shield in the dome, to prevent even the strongest gust of wind



Fig. 2.—Wood Ball Handle and Lifting and Lighting Device of the Norleigh Lantern.

entering the top of the globe, and to insure a steady flame, making it practically impossible to blow or jar out

be carried in the pocket like a jack knife, since the handle folds and locks in such a way as to protect the blade. The blade is ground with a flat, thin back, so that in shaving it can be laid flat against the face. When

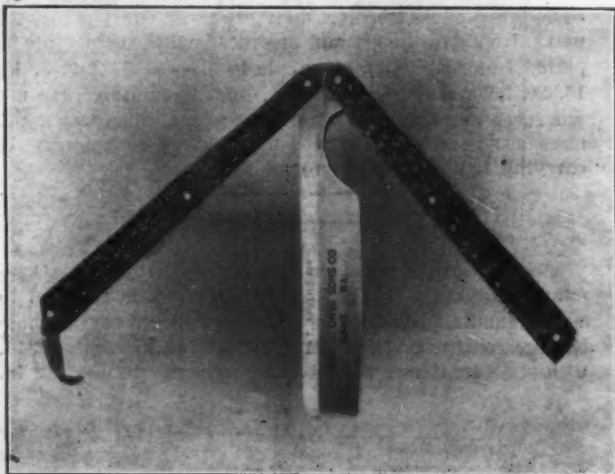


Fig. 2.—Razor, Half Open.

opened, Fig. 1, it can be locked in such a manner that the blade is entirely rigid, an advantage to a beginner or to a man with an unsteady hand. The razor closes up as indicated in Fig. 2, and when entirely closed and



Fig. 3.—Razor Closed and Locked.

locked is less than 3½ in. long, presenting the appearance shown in Fig. 3.

Shelby Stamped Steel Window Screen Hangers.

The Shelby Spring Hinge Company, Shelby, Ohio, has added to its line of screen hardware hangers for both full length and half length window screens. The hangers are of wrought steel, strong, durable and easily applied. Screens fitted with these hangers can be easily taken down without removing the nails and screws and be put away for winter and hung again in the spring without additional labor. They are japan finished, packed in sets with screens, 1 dozen sets in a box.

The U. C. Water Cooler.

A wooden water cooler, made by the Union Cooperage Company, St. Louis, Mo., is shown in the accompanying illustration. It is constructed with a dead air chamber between the outer and inner walls of the double cask,



The U. C. Water Cooler.

which serves as a compact and sanitary insulation. The coolers are made of select quarter sawed oak bound with galvanized steel hoops and are fitted with heavily nickel plated faucets. They are made in sizes of 1, 2, 3, 5, 10, 15, 20, 25 and 30 gal. capacity, and are suitable for use wherever cool drinking water is required. The 1 or 2 gal. sizes are provided with ball handles for convenience in carrying from one room to another.

The Hercules Chair.

A collapsable seat made by the Cherington Mfg. Company, Waukegan, Ill., and here illustrated, is referred to as the smallest, lightest and strongest accessory automobile seat on the market. It is adjustable to heights of 14, 16 and 18 in., has a swivel top, heavy canvas seat 12 in.

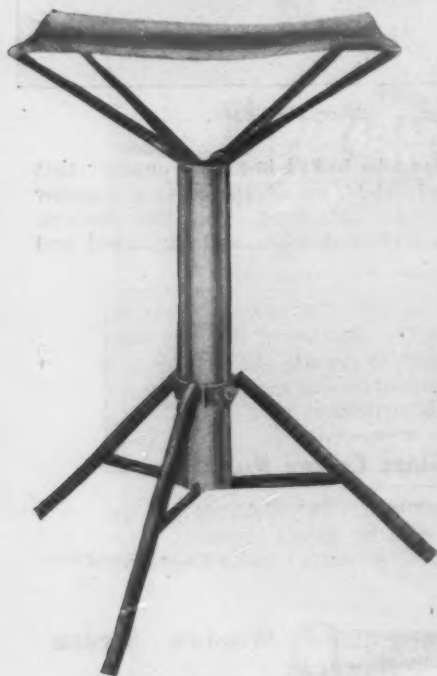


Fig. 1.—The Hercules Chair.

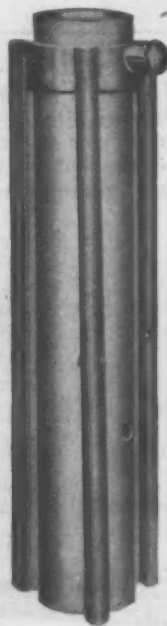


Fig. 2.—The Chair Folded.

square, is made of malleable iron and steel with nickel plate and black enamel finish, and weighs complete less than 2 lb. When folded, as shown in Fig. 2, it measures only 9 in. in length by 2 in. in diameter and can be easily carried in the pocket. It is built to sustain a weight of 400 lb. and its compact form makes it especially serviceable for use in motor boats, camping excursions, sketching, &c.

Creasey Ice Breakers.

Jos. S. Lovering Wharton, Harrison Safety Boiler Works, Philadelphia, manufacturer of Creasey ice breakers, is putting on the market this year a new line of ice breaking machines in which several improvements are incorporated. It may be remembered that the Creasey breaker has removable picks so held by friction in the drum of the machine that while they remain tight in use they can at any time be removed by the mere tap of a

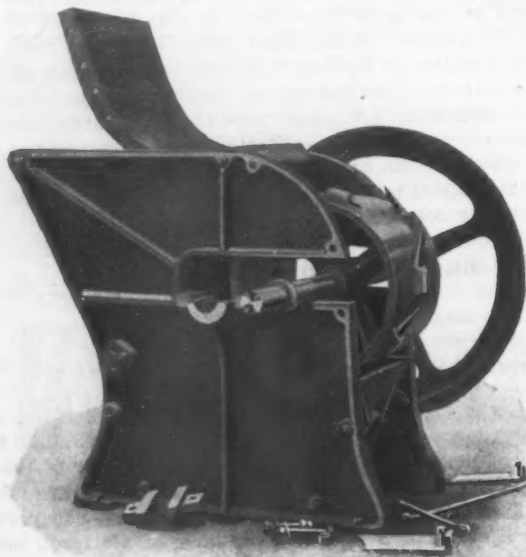


Fig. 1.—Creasey Ice Breaker No. 52-Y, Showing How Shaft May Be Removed.

hammer upon a simple pick driving tool. These round, sharp-pointed picks penetrate, split and shatter the ice with a minimum consumption of power, as in Fig. 2. Interchangeable combs have also been provided to regulate the size of the broken ice. In the new machines for 1909 this feature has been still further emphasized by arranging the front swinging plate of the machine so that it can be clamped in three different positions, which with the three different sizes of combs furnished will give at

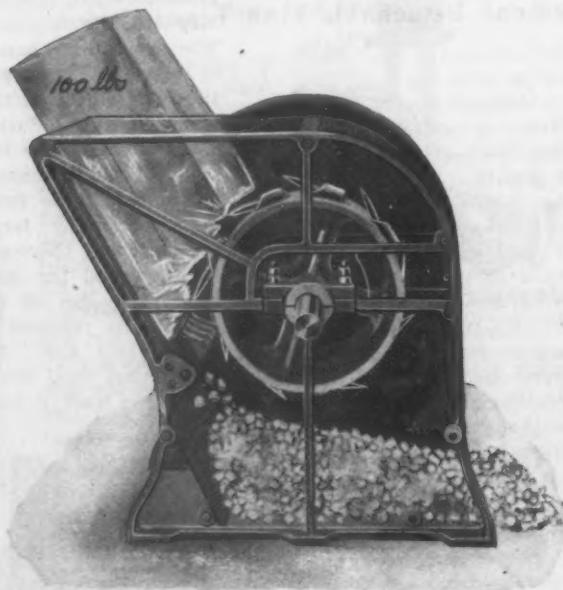


Fig. 2.—Interior View of Creasey Ice Breaker.

least six distinct grades or sizes of broken ice. Another new convenience is an adjustable delivery plate which can be changed in a few moments to feed the broken ice to the front or rear of the machine as may be desired. Other improvements include a longer and heavier shaft, split babbit bearings and a new style of frame, having a gap in it so that the drum can easily be slid or rolled out of the frame without dismounting it from the shaft as shown in Fig. 1. The gaps are closed with choke

plates when the machine is in operation. The frame is well braced and stiffened with deep ribs to give it greater strength, and its general contour is said to have been improved. The manufacturer also points out that the drum has been made heavier than formerly to make the machine run smoother and give it more power. The new machines are furnished in the sizes most commonly required, and will be known as Nos. 50-Y, 51-Y and 52-Y, replacing the older Creasey machines of the corresponding numbers. Many dimensions have been increased so as to give full and excess capacity over the normal ratings, and at the same time accommodate ice cakes of more irregular size. In addition to these three new sizes a further addition to the line is announced in the No. 48, which is claimed to be the largest ice breaking machine yet built, and is used for ice trains of refrigerator cars and boats where broken ice is wanted continuously at the rate of 35 to 40 tons per hour. As an indication of the dimensions of this machine, it may be stated that it will take a cake of ice 22 x 32 in.

The Bur-Nor Folding Screwdriver.

The tool here illustrated is a three blade screwdriver, of pocket knife pattern, designed and manufactured by the Burgess-Norton Mfg. Company, Geneva, Ill. Both handle and blades are made of polished steel, the latter being tempered to stand any reasonable amount of hard



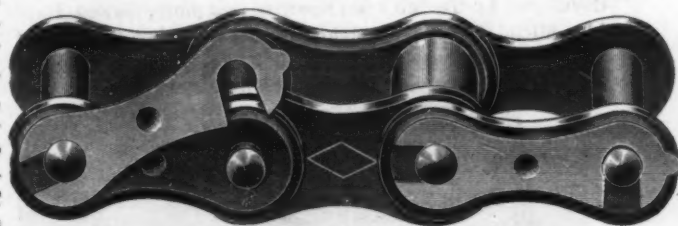
The Bur-Nor Folding Screwdriver.

usage. The blades, $2\frac{1}{2}$ in. in length, are tapered to different widths at the points and the length of the tool over all, when open, is $5\frac{1}{2}$ in. The drivers are inclosed in separate envelopes and packed in attractive cardboard boxes of 1 dozen each.

Diamond Detachable Link Transmission Chain.

The Diamond Chain & Mfg. Company, Indianapolis, Ind., is now manufacturing a detachable link chain, any link of which may be taken out or replaced without the use of special tools. The chain is put out to meet the objection which has been made against chain transmission that links in ordinary chains could not be replaced quickly, and a breakage involved a troublesome repair job and a considerable loss of time. Referring to the illustration the thin strap steel lock on top of each outside link slips into a groove around the rivet surface, and turning on one rivet as a center, slips down into a similar groove on the other rivet, thus preventing the side bar proper coming off. The strip is itself locked into position by being slightly warped inward, and having at its center an inward projection which snaps into a depression in the side bar. Once snapped into place the

accuracy, and will sell at the same price as regular Diamond riveted chains. The links and parts of the detachable link chain and the riveted chain are inter-



Diamond Detachable Link Chain.

changeable and the detachable link may be used for repairing the other type of chain.

Root Six Figure Counter.

The C. J. Root Company, Bristol, Conn., has added to its line a six figure counter, which counts to 1,000,000. The device is characterized by simplicity, as will be noted

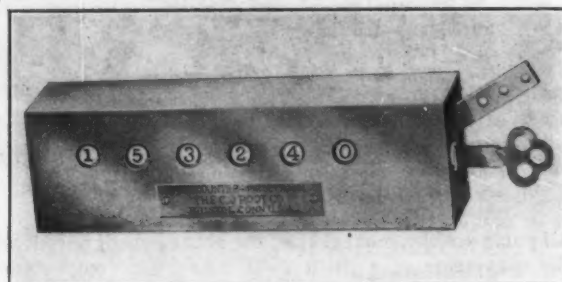


Fig. 1.—Root Six Figure Counter.

in Fig. 2, which shows it with the case open, revealing the mechanism. It has no springs, the return movement of the lever arm which actuates the gearing being by gravity. Resetting is accomplished quickly, the only neces-

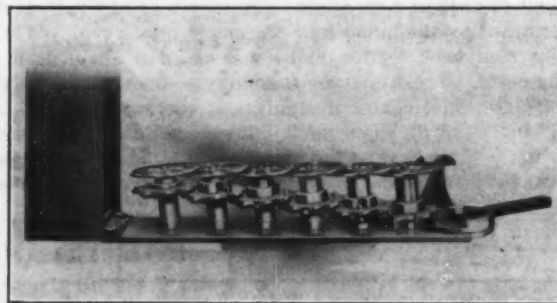
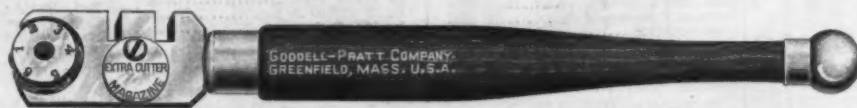


Fig. 2.—Interior of Root Counter.

sary preliminary being to open the case, pull out the dials $\frac{1}{4}$ in. and turn to zero. Because of the very small amount of power necessary to operate the counter it is especially adaptable to automatic and semiautomatic machines making small, light articles.

Goodell-Pratt Glass Cutter No. 400.

The Goodell-Pratt Company, Greenfield, Mass., has added to its line the glass cutter shown herewith. It is furnished with the company's regular turret head con-



Goodell-Pratt Glass Cutter No. 400.

strip cannot change its position unless an intentional upward pressure is exerted on the clip at the end.

The hole in the side bar is so reamed that when the bar is locked in position there is perfect bearing contact between the rivet shoulder and the side bar throughout the thickness of the bar. It is stated that the chain is made of the same high grade materials, with the same

taining six cutter wheels, and has a magazine compartment containing six additional cutters. The handle is the company's regular rosewood finish and has a steel ball at the end for convenience in glass breaking. The cutter is very similar in appearance to the manufacturer's No. 1. and is supplied with wheels of the same quality, ground, honed and tested.

Terrell's Steel Shelving.

A new line of steel racks, bins and shelving, adapted to the storage and display of hardware and other goods, developed by Terrell's Equipment Company, Grand Rapids, Mich., is here illustrated. A particular feature in the design of these shelves is that of adjustability to various requirements in the convenient disposition of stock.



Section of Terrell's Steel Shelving.

All parts are interchangeable, the arrangement permitting the conversion of a plain shelf into a bin compartment without any bolting or riveting. The shelves or racks can be assembled and put up easily and quickly without the aid of skilled mechanics, the only tools required being a wrench, screwdriver and hammer. The height of the racks can be increased as desired, owing to the interchangeability of the shelves. All of the racks are built on the unit system, and provision is made for the adjustment of shelves 4 in. apart. The length of any rack is determined by the number of units or sections required, the length of each section being measured by the length of the shelf. Racks may be indefinitely extended by securing additional center uprights and the required number of shelves to fill the section. They are made either with or without backs, and are supplied with ladders, as shown in the illustration, which may be omitted if desired. They

are finished in black air dry or baked enamel, for which, upon special order, olive green or maroon may be substituted. Being strongly and rigidly constructed they are particularly serviceable for the storage of hardware, oils, paints and other heavy merchandise, and being of steel construction throughout are both fireproof and sanitary. The racks are made in standard sizes, in heights from 5 ft. to 10 ft., with shelves 16 in. wide x 28 in. long up to 30 in. wide x 40 in. long.

Fillet or Radius Gauge.

The L. S. Starrett Company, Athol, Mass., and 132 Liberty street, New York, has added to its line the Fillet or Radius gauge, No. 178, here shown, with illustrations, Fig. 2, indicating some of the uses of the gauge. This device which gauges concave and convex surfaces is especially adapted for use in laying out special forming tools,

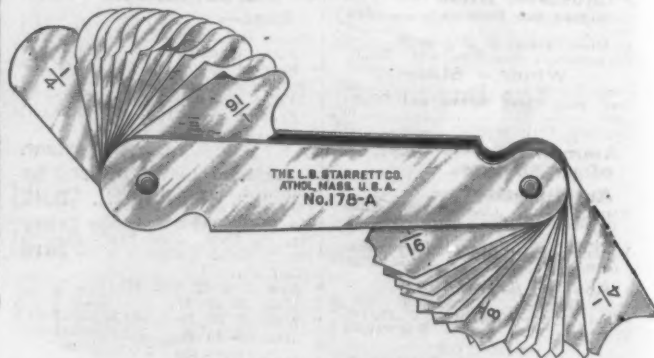


Fig. 1.—Fillet or Radius Gauge.



Fig. 2.—Some Applications of the Fillet Gauge.

dies and kindred work, as well as for measuring fillets. It is designed for the use of machinists, tool makers and patternmakers. Size A has 26 leaves, stamped to indicate radii by sixty-fourths, from 1-16 to 1/4 in. (one-half diametric size). Diameters are from 1/8 to 1/2 in. by thirty-seconds. Size B is made with 32 leaves stamped to indicate radii by sixty-fourths, from 17-64 to 1/2 in. Diameters are from 17-32 to 1 in., varying by thirty-seconds. The style case for size B is the same as that of the No. 155 screw pitch gauge, made by the company.

PAINTS, OILS AND COLORS

| Animal, Fish and Vegetable Oils— | |
|---------------------------------------|-----------------------|
| Linseed, Western, Raw..... | 5 bbl. lots. |
| State, Raw..... | 25 @ 64 |
| City, Raw..... | 56 @ 67 |
| Boiled, 1¢ gal. advance on Raw. | |
| Raw, Calcutta, in bbls..... | 75 @ |
| Lard, Prime, Winter..... | 78 @ 80 |
| Extra No. 1..... | 87 @ 88 |
| No. 1..... | 88 @ 89 |
| Cotton-seed, Crude, f.o.b. mill..... | 31 1/4 @ 32 1/4 |
| Summer, Yellow, prime..... | 5.33 @ 5.38 |
| Summer, White..... | 5 1/4 @ 5 1/2 |
| Yellow, Winter..... | 5 1/4 @ 5 1/2 |
| Tallow, Acidless..... | 56 @ |
| Menhaden, Brown, Strained..... | 33 @ 34 |
| Northern Crude..... | 24 @ 25 |
| Southern..... | 24 @ 25 |
| Light Strained..... | 33 @ 34 |
| Bleached Winter..... | 36 @ |
| Cocunut, Ceylon..... | 10 1/2 @ 10 3/4 |
| Cochin..... | 10 1/2 @ 10 3/4 |
| Cod, Domestic, Prime..... | 38 @ |
| Newfoundland..... | 38 @ |
| Red Elaine..... | 43 @ 44 |
| Sapponified..... | 20 1/2 @ 21 |
| Olive, Yellow..... | 11.50 @ 11.60 |
| Neatsfoot, Prime..... | 37 @ |
| Palm, Lagos..... | 10 1/2 @ 10 3/4 |
| Mineral Oils— | |
| Black, 29 gravity, 25¢ cold test..... | 13 @ 13 1/4 |
| 29 gravity, 15 cold test..... | 13 1/4 @ 14 |
| Summer..... | 13 1/4 @ 14 |
| Cylinder, light filtered..... | 20 1/2 @ 21 |
| Dark, filtered..... | 18 @ 19 |
| Paraffine, 90-97 sp. gravity..... | 14 1/4 @ 15 |
| 90-93 sp. gravity..... | 13 1/4 @ 14 |
| 88-93 sp. gravity..... | 11 @ 11 1/4 |
| Red..... | 13 1/4 @ 14 |
| Miscellaneous— | |
| Barytes: | |
| White, Foreign..... | 1 ton \$18.50 @ 20.50 |
| Amer., floated..... | 20 ton 17.00 @ 18.00 |
| Or color..... | 1 ton 12.50 @ 15.00 |
| Chalk in bulk..... | 1 ton 3.00 @ 3.40 |

| China Clay, Imported..... | 1 ton 11.50 @ 13.00 |
|---------------------------------------|---------------------|
| Cobalt, Oxide..... | 100 lb 1.45 @ 2.00 |
| Whiting, Commercial..... | 100 lb 1.45 @ 2.00 |
| Gilders..... | 100 lb 5.00 @ 6.00 |
| Ex. Gilders..... | 100 lb 5.00 @ 6.00 |
| Putty, Commercial— | |
| In bladders..... | 1.75 @ 2.00 |
| In bbls. or tubs, 100 lb..... | 1.20 @ 1.45 |
| In 1 lb to 5 lb tins..... | 2.50 @ 3.25 |
| In 12 1/2 to 50 lb tins..... | 1.50 @ 1.90 |
| Spirits Turpentine— | |
| In Machine bbls..... | 39 1/4 @ 40 |
| In Oil bbls..... | 40 @ 40 1/2 |
| Glue— | |
| Cabinet..... | 12 @ 15 |
| Common Bone..... | 7 1/4 @ 9 |
| Extra White..... | 18 @ 24 |
| Fish, liquid, 50 gal. bbls., per gal. | |
| Ion..... | 60 @ 1.20 |
| Foot Stock, White..... | 12 @ 14 |
| Foot Stock, Brown..... | 9 @ 11 |
| German Common Hide..... | 10 @ 12 |
| German Hide..... | 12 @ 18 |
| French..... | 10 @ 40 |
| Irish..... | 13 @ 16 |
| Low Grade..... | 10 @ 12 |
| Medium White..... | 14 @ 19 |
| Gum Shellac— | |
| Bleached, Commercial..... | 17 1/2 @ 18 |
| Bone Dry..... | 22 @ 23 |
| Button..... | 20 @ 30 |
| Diamond I..... | 29 @ 30 |
| Fine Orange..... | 23 @ 24 |
| A. C. Garnet..... | 16 1/2 @ 17 |
| G. A. L. Garnet..... | 12 @ 17 |
| Kala Button..... | 12 @ 13 |
| D. C..... | 20 @ 30 |
| Octagon B..... | 24 @ 26 |
| T. N..... | 15 1/2 @ 16 1/2 |
| V. S. O..... | 27 @ 28 |
| Colors in Oil— | |
| Black, Lampblack..... | 12 @ 14 |
| Blue, Chinese..... | 36 @ 46 |
| Blue, Prussian..... | 22 @ 36 |

| Blue, Ultramarine..... | 13 @ 16 |
|--|-----------------|
| Brown, Vandyke..... | 11 @ 14 |
| Green, Chrome..... | 12 @ 14 |
| Green, Paris..... | 24 @ 24 |
| Sienna, Raw..... | 12 @ 15 |
| Sienna, Burnt..... | 12 @ 15 |
| Umber, Raw..... | 11 @ 14 |
| Umber, Burnt..... | 11 @ 14 |
| White and Red, Lead &c.— | |
| Lead, English white, in Oil, 10% @ 10 1/2% | |
| Lead, American White: | |
| Dry and in Oil, 100, 250 and | |
| 500 lb kegs..... | 6 1/4 |
| Dry and in Oil, 25 and 50 | |
| lb kegs..... | 7 |
| Dry and in Oil, 12 1/2 lb kegs..... | 7 1/4 |
| In Oil, 25 lb tin pails..... | 7 1/4 |
| In Oil, 12 1/2 lb tin pails..... | 7 1/4 |
| In Oil, 1, 2, 3 and 5 lb tin | |
| cans, ass't..... | 8 1/2 |
| Red Lead and Litharge: | |
| In 100 lb kegs..... | 7 |
| In 25 and 50 lb kegs..... | 7 1/4 |
| In 12 1/2 lb kegs..... | 7 1/4 |
| In lots of less than 500 lbs. | |
| 1/4 lb advance over | |
| above prices of White and | |
| Red Lead and Litharge. | |
| Lead, American. Terms: On lots of | |
| 500 lbs and over, 60 days, or 2% for | |
| cash if paid in 15 days from date of | |
| invoice. | |
| Zinc, Dry— | |
| American, dry..... | 5 1/4 @ 5 1/2 |
| Red Seal (French process)..... | 6 1/4 @ 7 |
| Green Seal..... | 7 1/4 @ 7 1/2 |
| German Red Seal (French | |
| process)..... | 7 @ 7 1/4 |
| Green Seal..... | 7 1/4 @ 7 1/2 |
| White Seal..... | 8 1/4 @ 9 |
| French, Red Seal..... | 8 1/4 @ 9 |
| Green Seal..... | 10 1/2 @ 10 1/2 |
| Dry Colors— | |
| Black, Carbon..... | 6 1/4 @ 10 |
| Black Drop, American..... | 2 1/2 @ 3 |

| | |
|-------------------------------------|------------------------|
| Black Drop, English..... | 5 @ 15 |
| Black, Ivory..... | 10 @ 20 |
| Lamp, commercial..... | 4 @ 6 |
| Blue, Celestial..... | 4 @ 6 |
| Blue, Chinese..... | 30 @ 31 |
| Blue, Prussian, Domestic..... | 28 @ 30 |
| Blue, Ultramarine..... | 5 @ 15 |
| Brown, Spanish..... | 1 1/2 @ 1 |
| Carmine, No. 40..... | 3.00 @ 3.10 |
| Green, Chrome, ordinary..... | 3 1/4 @ 5 |
| Green, Chrome, pure..... | 17 @ 25 |
| Ocher, American..... | 1 ton \$12.00 @ 15.00 |
| American Golden..... | 4 @ 5 |
| French..... | 1 1/4 @ 2 |
| Foreign Golden..... | 3 @ 4 |
| Orange Mineral, English..... | 10 @ 12 |
| French..... | 12 1/2 @ 13 |
| German..... | 12 @ 13 |
| American..... | 8 1/4 @ 10 |
| Red, Indian, English..... | 5 @ 7 |
| American..... | 3 @ 3 1/4 |
| Red, Turkey, English..... | 4 @ 10 |
| Red, Tuscan, English..... | 7 @ 10 |
| Red, Venetian, Amer..... | 100 lb 30.75 @ 1.50 |
| English..... | 100 lb \$1.15 @ 1.60 |
| Sienna, Italian, Burnt and | |
| Powdered..... | 3 @ 9 |
| Italian, Raw, Powdered..... | 3 @ 7 |
| American, Raw..... | 2 1/4 @ 3 |
| American Burnt and Pow'd..... | 2 1/4 @ 3 |
| Talc, French..... | 1 ton \$18.00 @ 25.00 |
| American..... | 1 ton 15.00 @ 25.00 |
| Terra Alba, French..... | 100 lb .80 @ 1.00 |
| English..... | 100 lb .90 @ 1.00 |
| American..... | 100 lb No. 1. 75 @ .80 |
| American..... | 100 lb No. 2. 60 @ .65 |
| Umber, T'key, Bnt. & Pow. 2 1/2 @ 3 | |
| Turkey, Raw and Powdered. 2 1/2 @ 3 | |
| Burnt, American..... | 1 @ 2 1/2 |
| Raw, American..... | 2 @ 2 1/2 |
| Yellow, Chrome, Pure..... | 12 1/2 @ 14 |
| Oxide Red, American..... | 2 @ 7 1/2 |
| Vermilion, English, Imported..... | .60 @ |
| Chinese..... | 30.00 @ 1.00 |

Current Hardware Prices.

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are usually given to larger buyers.

Special Goods.—Quotations printed in small type (Roman) relate to goods of particular manufacturers, who request the publication of the prices named and are responsible for their correctness. They usually represent the prices to the small trade, lower prices being generally obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Prices.—A range of prices is indicated by means of the symbol @. Thus 33% @ 33% & 10% signifies

that the price of the goods in question ranges from 33% per cent. discount to 33% and 10 per cent. discount.

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued annually, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—"The Iron Age Standard Hardware Lists" contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters, Blind—

Columbian and Domestic.....33%
North's.....10%
Upson's Patent, 1/2 gro., \$29.90.....10%
Zimmerman's—See Fasteners, Blind.

Window Stop—

Ives' Patent.....10%
Ives' Stop Bead Screws and Washers.....10%
Taplin's Perfection.....10%

Ammunition—See Caps, Cartridges, Shells, etc.

Anti-Rattlers—

Fernald Mfg. Co., Burton Anti-Rattlers, 1/2 doz. pairs, Nos. 1, \$0.75; 2, \$0.60; 4, \$1.00; 5, \$0.50.
Fernald Quick Shifter, 1/2 doz. pairs.....\$2.00@3.00

Anvils—American—

Eagle Anvil.....1/2 lb @ 8¢
Hay-Budden, Wrought.....9¢@9 1/2¢
Trenton.....1/2 lb 9¢@9 1/2¢

Imported—

Swedish Solid Steel Paragon, 1/2 lb.....10¢
Svea Solid Steel Sisco, Superior, 1/2 lb.....10¢
1 1/2 lb Wright & Sons, 1/2 lb, \$1 to 3 1/2 lb, 1 1/2 lb; 350 to 600 lb, 1 1/2 lb.

Anvil, Vice and Drill—

Millers Falls Co., \$18.00.....15¢@10%

Apple Parers—See Parers, Apple, etc.

Aprons, Blacksmiths'—

Livingston Nail Co.....10%

Augers and Bits—

Com. Double Spur.....80%
Jennings' Patn., Bright, 55¢@10¢
Black Lip or Blued.....65¢@65¢
Boring Mach. Augers.....70%
Car Bits, 12-in. twist.....40¢@10%
Ford's Auger and Car Bits.....40¢
Ft. Washington Auger Co., Concord's.....25%
Forester Pat. Auger Bits.....25%
C. E. Jennings & Co.:
No. 10 ext. lip, R. Jennings' list.....25¢@7 1/2¢
No. 30, R. Jennings' list.....25¢@10¢
Russell Jennings.....25¢@10¢
L'Hommedieu Car Bits.....15¢
Mayhew's Countersink Bits.....45¢
Pugh's Black.....20¢
Pugh's Jennings' Pattern.....25¢
Snell's Auger Bits.....60¢
Snell's Bell Hangers' Bits.....60¢
Snell's Car Bits, 12-in. twist.....60¢
Snell's King Auger Bits.....60¢
Swan's.....60¢@10¢
Swan's, Jennings' Pattern.....50¢
Wright's Jennings' Bits.....50%

Bit Stock Drills—

See Drills, Twist.

Expansive Bits—

Clark's Pattern, No. 1, 1/2 doz., \$28; No. 2, \$18.....60¢@10%
Ford's, Clark's Pattern.....60¢@10%
C. E. Jennings & Co., Steer's Patn.....25¢
Lavigne Pat., small size, \$18.00; large size, \$26.00.....60¢@10%
Swan's.....60%

Gimlet Bits—

Per gro.

Common Dbl. Cut.....\$3.00@3.25

German Pattern, Nos. 1 to 10, \$4.75; 11 to 13, \$3.75

Hollow Augers—

Bonney Pat., per doz.....\$5.50@6.00

Ames.....20¢@10%

Universal.....20%

Ship Augers and Bits—

Ship Augers.....40¢@10%

Ford's.....35¢@5%

C. E. Jennings & Co.:
L'Hommedieu's.....67%
Watrous'.....35¢@7 1/2¢
Snell's.....48%

Awl Hafts—See Handles, Mechanics' Tool.

Awls—

Brad Awls:

Handled.....gro. \$2.75@3.00

Unhndld, Shlderd.....gro. \$3.00@3.25

Unhndld, Patent.....gro. \$0.80@1.00

Peg Awls:

Unhndld, Patent.....gro. \$1.00@1.25

Unhndld, Shlderd.....gro. \$0.75@1.00

Scratch Awls:

Handled, Com.....gro. \$3.50@4.00

Handled, Rocket, gro. \$11.50@12.00

Elmore Tool Mfg. Co.:
Timmer's and Brad Awls.....55¢@7%

Scratch Awls.....60%

Awl and Tool Sets—See Sets, Awl and Tool.

Axes—

Single Bit, base weights: Per doz.

First Quality.....\$1.75@1.50

Second Quality.....\$1.25@1.50

Double Bit, base weights:

First Quality.....\$7.00@7.50

Second Quality.....\$6.50@6.75

Axle Grease—

See Grease, Axle.

Axles—

Iron or Steel.

Concord, Loose Collar.....4 1/4¢@1 1/2¢

Concord, Solid Collar.....4 1/4¢@1 1/2¢

No. 1 Common, Loose.....3 1/4¢@1 1/2¢

No. 1 1/2 Com., New Style.....4 1/4¢@1 1/2¢

No. 2 Solid Collar.....4 1/4¢@1 1/2¢

Half Patent:

Nos. 7, 8, 11 and 12.....70%

Nos. 13 to 14.....70%

Nos. 15 to 18.....70¢@10¢@70¢@10¢

Nos. 19 to 22.....70¢@10¢@70¢@10¢

Boxes, Axles—

Common and Concord, not turned.....1/2 lb, 6¢@6¢

Common and Concord, turned, 1/2 lb, 6¢@7¢

Half Patent.....1/2 lb, 9¢@10¢

Bait—

Hendryx:

A Bait.....20%

B Bait.....25%

Competitor Bait.....20¢@5%

Balances—

Caldwell new list.....50¢@10%

Pullman.....50¢@10%

Spring—

Light Spring Balances.....60¢@65¢

Chatillon's:

Light Spg. Balances.....50¢@50¢@10%

Straight Balances.....40¢@40¢@10%

Circular Balances.....50¢@10%

Large Dial.....30%

Barb Wire—See Wire, Barb.

Bars—

Crow—

Steel Crowbars, 10 to 40 lb., per lb., 2 1/4¢@2 1/2¢

No. 10 Ideal, Nickel Plate.....1/2 gro. \$8.50

Towel—

No. 10 Ideal, Nickel Plate.....1/2 gro. \$8.50

Beam, Scale—

Scale Beams.....40%

Chatillon's No. 1.....30%

Chatillon's No. 2.....40%

Beaters, Carpet—

Holt-Lyon Co.:
No. 12 Wire Coppered 1/2 doz. \$0.80;
Tinned.....\$0.85

No. 11 Wire Coppered 1/2 doz. \$1.15;
Tinned.....\$1.20

No. 10 Wire Tinned.....1/2 doz. \$1.50

Beaters Egg—

Dover Stamping & Mfg. Co.:
Genuine Dover, per gro., No. 1,
Tumbler Size, \$7.50; No. 2, Family
Size, \$7.50; No. 3 Extra Family
Size, \$24.00; No. 4, Hotel Size,
\$50.00.

Holt-Lyon Co.:
Holt, per doz., No. 5, Jap'd, \$0.80;
No. 4, Jap'd, \$1.15; No. 6, Jap'd,
\$1.85; No. 6, Jap'd, \$1.05.

Lyon, Jap'd, per doz., No. 2,
\$1.35.

Taplin Mfg. Co.:
Improved Dover, per gro., No. 60,
\$4.00; No. 75, \$4.50; No. 100, \$7.00;
No. 102, Tin'd, \$2.50; No. 150,
Hotel, \$15.00; No. 152, Hotel
Tin'd, \$17.00; No. 200, Tumbler
Tin'd, \$25.00; No. 202, Tumbler Tin'd,
\$35.00; No. 300, Mammoth, per
doz., \$25.00.

Bellows—

Blacksmith, Standard List:

Split Leather.....60¢@10¢@65%

Grain Leather.....10¢@10¢@10%

Hand—

Inch.....6 7 8 9 10

Dos. \$3.00 5.50 6.00 6.50 7.50

Molders—

Inch.....10 12 14 16

Dos. \$7.50 9.00 12.00 15.00

Bells—Cow—

Wrought Cow Bells.....75%

Jersey.....75¢@10%

Texas Star.....50%

Home, R. & E. Mfg. Co.'s.....55¢@10%

Door—

Hand—

Polished, Brass.....60¢@10¢@10%

White Metal.....60¢@10¢@10%

Nickel Plated.....50¢@10%

Swiss.....50¢@10%

Coue's Globe Hand Bells.....35¢@35%

Miscellaneous—

Farm Bells.....1/2 lb, 2 1/4¢@2 1/4¢

Church and School.....60¢@10¢@10%

Belting—Leather—

First Quality, Ex. Hy., Strictly

Short Lap.....60¢@10%

Standard.....70¢@10¢@10¢@5%

Light Double.....75¢@10%

Cut Leather Lacing.....45¢@50%

Leather Lacing Sides, per sq. ft. 25¢

Rubber—

Competition (Low Grade),

70¢@10¢@75%

Standard.....60¢@10¢@70%

Best Grades.....40¢@50%

Bench Stops—

See Stops, Bench

Benders and Upsetters,

Tire—

Green River Tire Benders and Up-

setters.....20%

Bicycle Goods—

John B. Long's Son & Co.'s 1908 list:

Chain, Parts, Spokes.....50%

Tubes.....60%

Bits—

Auger, Gimlet, Bit Stock Drills,

&c.—See Augers and Bits.

Blocks Tackle—

Common Wooden.....75¢@75¢@5%

B. & L. B. Co.:
Boston Wood Snatch, 50%; Eclipse

Steel, 75%; Hollow Steel, 50¢@10%;

Star Wire Rope, 50%; Tarbox

Metal Snatch, 50%; Tarbox New

Style Steel, 50¢@10%; Wire Rope

Snatch, 50%.

Lane's Patent Automatic Lock and

Junior.....30%

See also Machines, Hoisting.

Boards, Stove—

Paper and Wood Lined.....55%

Embossed.....55%

Boards, Wash—

See Washboards.

Bobs, Plumb—

Keuffel & Esser Co.....35¢@10%

Belts

Carriage, Machine, &c.—

Common Carriage (cut thread):

1/2 x 6 and smaller.....75¢@10%

Larger and longer.....70¢@10%

Common Carriage (rolled thread):

1/2 x 6, smaller and shorter,

75¢@10¢@5%

Phila. Eagle, \$3.00 list.....80¢@—

Bolt Ends, with C. & T. Nuts,

70¢@10%

Machine (Cut Thread):

1/2 x 4 and smaller.....75¢@10¢@5%

Larger and longer.....70¢@10¢@5%

Door and Shutter—

Cast Iron Barrel, Japanned,

Round Brass Knobs:

Inch.....3 4 5 6 8

Per doz. \$0.30 .35 .45 .60 .80

Cast Iron Spring Foot, Jap'd:

Inch.....6 8 10

Per doz.....\$1.20 1.50 2.25

Cast Iron Chain, Flat, Japanned:

Inch.....6 8 10

Per doz.....\$1.00 1.40 1.65

Cast Iron Flat Shutter, Jap'd,

Brass Knobs:

Inch.....6 8 10

Per doz.....\$0.75 .95 1.25

Wrought Barrel Japanned,

90¢@10¢@10¢@5%

Barrel Bronzed.....60¢@10%

Spring.....70¢@10¢@10¢@10%

Shutter.....50¢@50¢@10¢@5%

Square Neck.....75¢@75¢@10%

Square.....70¢@10¢@10¢@10%

Ives' Mortise.....10%

Ives' Wrought Metal.....10%

Expansion—

F. H. Evans' Crescent.....10¢@10%

Richards Mfg. Co.....55¢@10%

Star Expansion Bolt Co.:
Star, Lag Screw Type.....60¢@10¢@5¢@2 1/2¢

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Cages, Bird—

Hendryx Brass: Series 3000, 6000,
1100, net list; 1200, 15%; 200, 300,
900 30%
Hendryx Bronze: Series 700, 800, 30%
Hendryx Enameled, 35%

Calipers—See Compasses.

Calks, Toe and Heel—

Blunt, 1 prong, per 100 lb.,
\$3.50 @ \$3.85
Sharp, 1 prong, per 100 lb.,
\$4.00 @ \$4.35

Burke's, 1 pr. Blunt Toe, 3/4"; 2 pr.
Blunt Toe, 4/4"; 1 pr. Sharp Toe,
4/4"; 2 pr. Sharp, 4/4"; Blunt
Heel, 4/4"; Sharp Heel, 4/4";
Lauter, Blunt, 4/4"; Sharp, 4/4";
Perkins, Blunt, 3/4"; Sharp, 4/4";
4.15¢

Can Openers—

See Openers, Can.

Caps, Percussion—

Eley's E. B. 52¢ @ 55¢
G. D. per M. 31¢ @ 35¢
F. L. per M. 40¢ @ 42¢
G. E. per M. 48¢ @ 50¢
Musket per M. 62¢ @ 65¢

Primers—

Berdan Primers, 22 per M. 20¢ @ 5¢
Primer Shells and Bullets, 15¢ @ 10¢
All other primers per M. \$1.50 @ \$1.60

Carpet Stretchers—

See Stretchers, Carpet.

Cartridges—

Blank Cartridges:
32 C. F., \$5.50 10¢ @ 5¢
32 C. F., \$7.00 10¢ @ 5¢
23 cal. Rim, \$1.50 10¢ @ 5¢
32 cal. Rim, \$2.75 10¢ @ 5¢
B. B. Caps, Con. Ball, Sued. \$1.00
B. B. Caps, Round Ball, \$1.49
Central Fire 25¢
Target and Sporting Rifle, 15¢ @ 5¢
Primed Shells and Bullets, 15¢ @ 10¢
Rim Fire, Sporting, 50¢
Rim Fire, Military, 15¢ @ 5¢

Casters—

Bed 65¢ @ 70¢
Plate 60¢ @ 65¢
Philadelphia 70¢ @ 75¢
Acme Ball Bearing, 35¢
Gem (Roller Bearing), 70¢ @ 10¢ @ 5¢
Steel Gem (Roller Bearing), 70¢
Standard Ball Bearing, 45¢
Yale (Double Wheel) low list, 40¢ @ 10¢

Cattle Leaders—

See Leaders, Cattle.

Chain, Proof Coil—

American Coil, Straight Link:
3-16 3/4 5-16 3/4 1/2 3/4 5/8
\$7.45 4.20 3.85 3.25 3.10 3.00
3/4-1 1/4 to 1 1/2 inch,
\$2.90 3.00

In case lots, deduct 25¢.
German Coil, 70¢ @ 5¢
German Pattern Coil:
6-0 to 1 70¢ @ 10¢ @ 5¢
2 and 3 60¢ @ 10¢ @ 70¢
4, 5 and 6 50¢ @ 10¢ @ 10¢ @ 5¢

Halter—

Halter Chains, 60¢ @ 5¢ @ 10¢
German Pattern Halter Chains,
list July 2, '97, 70¢ @ 5¢
Covert Mfg. Co., 35¢ @ 5¢
Halter 35¢ @ 5¢
See Halters and Ties.

Cow Ties—

See Halters and Ties.

Trace, Wagon, &c.—

Traces, Western Standard: 100 pr.
6/2-6-3, Straight, with ring, \$26.00
6/2-6-2, Straight, with ring, \$27.00
6/2-6-2, Straight, with ring, \$30.00
6/2-10-2, Strght, with ring, \$35.00

NOTE—Add 2¢ per pair for Hooks
Tees Traces; add per pair for Nos. 2
and 3, 2¢; No. 1, 3¢; No. 0, 4¢ to price of
Straight Link.
Eastern Standard Traces, Wag-
on Chain, &c., 70%

Miscellaneous—

Jack Chain, list July 10, '93:
Iron 60¢ @ 10¢ @ 5¢ @ 10¢
Brass 65¢
Safety and Plumbers' Chain, 75¢
Gal. Pump Chain, lb., 4/4¢ @ 5¢
Bridgeport Chain Co.:
Triumph Halter and Coll, 35¢ @ 40¢
Triumph Dog, 50¢ @ 10¢ @ 60¢
Brown Halter and Coll, 45¢ @ 50¢
Covert Mfg. Co.:
Breast, Halter, Heel, Rein, Stal-
lion 40¢
Onedra Community:
American Halter, Dog and Kennel
Chains 35¢ @ 25¢ @ 40¢
Niagara Dog Leads and Kennel
Chains 15¢ @ 30¢ @ 5¢
Wire Good, Co.:
Dog Chain, 70¢
Universal Dbl. Jointed Chain, 70%

Chain and Ribbon, Sash—

Onedra Community:
Steel Chain, 60%
Pullman:
Bronze Chain, 60%; Steel Chain,
Coppered 60¢ @ 10¢
Sash Chain Attachments, per set, 8¢
Aluminum Sash Ribbon, per 100
ft. \$2.00 @ \$5.00
Sash Ribbon Attachments, per set, 8¢

Chalk—

Carpenters' Blue, 50¢
Carpenters' Red, 50¢
Carpenters' White, 40¢

Checks, Door—

Bardley's, 45¢
Pullman, per gro. 54¢
Russwin 35¢

Chests, Tool—

American Tool Chest Co.:
Roy's Chests, with Tools, 55¢
Youth's Chests, with Tools, 40¢
Gentlemen's Chests, with Tools, 30¢
Farmers', Carpenters, etc., Chests,
with Tools 20¢
Machinists' and Pipe Fitters'
Chests, Empty 15¢
Tool Cabinets, 15¢
C. E. Jennings & Co.'s Machinists'
Tool Chests, 75%

Chisels—

Socket Framing and Firmer
Standard List, 80¢ @ 10¢ @ 10¢ @ 10¢
Buck Bros., 30%
C. E. Jennings & Co.:
Socket Firmer No. 10, 25¢ @ 74¢
Socket Framing No. 15, 25¢ @ 74¢
Swan's 66¢ @ 70¢
L. & I. J. White & Co., 30¢ @ 35¢

Tanged—

Buck Bros., 30%
C. E. Jennings & Co. Nos. 101, 181, 25¢
L. & I. J. White Co., 25¢ @ 5¢

Cold—

Cold Chisels, good quality, 13¢ @ 15¢
Cold Chisels, fair quality, 11¢ @ 12¢
Cold Chisels, ordinary, 9¢ @ 10¢
Elmore Tool Mfg. Co.:
Cold Chisels, 50¢ @ 5¢

Chucks—

Almond Drill Chucks, 35%
Almond Turret Six-Tool Chuck, 40%
Beach Pat, each \$3.00, 35¢ @ 5¢
Empire 25¢
Blacksmiths' 25¢
Jacobs' Drill Chucks, 25¢
Pratt's Positive Drive, 25¢
Skinner Lathe Chucks: 35%

Universal, Reversible Jaws, 35%

Universal, Reversible Jaws, 35%

Combination, Reversible Jaws, 35%

Combination, Com. Style Jaws, 35%

Round Body or Box Body, 2 Chuck
Jaws 25%

Geared Scroll Chucks, 25%

Drill Chucks:
New Model, 25%; Geared Pat-
tern, 25%; Skinner Patent, 25%

Positive Drive, 25%

Planer Chucks, 20%

Standard 45%

Drill Press Vises, 30%

Face Plate Jaws, 35%

Standard Tool Co.:
Improved Drill Chuck, 45%

Union Mfg. Co.:
Combination, Nos. 1, 2, 3, 4, 5, 6,
7, 8 and 17, 40%; No. 21, 35%

Scroll Combinations, Nos. 83 and
84 30%

Geared Scroll, Nos. 33, 34 and 35, 30%

Independent Iron, Nos. 18 and 318, 30%

Independent Steel, No. 64, 25%

Union Drill, Nos. 000, 00, 100, 101,
102, 103, 104, 35%

Union Gear Drill, 25%

Universal, 11, 12, 16, 17, 13, 14, 15, 40%
Universal No. 45, 35%

Iron Face Plate Jaws, Nos. 28, 30,
48 and 50, 35%

Steel Face Plate Jaws, Nos. 70 and
72 30%

Westcott Patent Chucks:
Lathe Chucks, 50%

Little Giant Auxiliary Drill, 50%

Little Giant Double Grip Drill, 50%

Little Giant Drill, Improved, 50%

Onedra Drill, 50%

Scroll Combination Lathe, 50%

Whitaker Mfg. Co.:
National Drill, 25%

Clamps—

Carriage Makers', Star, P., S. & W.
Co. 50%
Bealy, Parallel, 35¢ @ 10¢
Hammer & Co.:
Adjustable 20¢ @ 5¢
Carriage Makers' H. P. Screw, 40¢ @ 5¢
Myers' Hay Rack, 50%

Lineman's Swedish Saw, 65%

Saw Clamps, see Saw Filers

Cleaners, Drain—

Iwan's Champion, Adjustable, 50%

Iwan's Champion, Stationary, 40%

Sidewalk—

American Fork & Hoe Co.:
Star, 3/4 doz., Socket, \$4.00;
Shank, 3/4 doz., X 7/8, \$3.50; Shank,
X 8 \$3.75

Cleavers, Butchers—

Foster Bros., 30%

Fayette R. Plumb, 30%

L. & I. J. White Co., 30%

Clippers, Horse and Sheep—

Chicago Flexible Shaft Co.:
1902 Chicago Horse, each, \$19.75
20th Century Horse, each, \$25.00
Lightning Belt Horse, each, \$15.00
Chicago R-T Horse, each, \$20.00
Stewart's Enclosed Gear Ball
Bearing Horse, each, \$7.50
Stewart's New Model Sheep
Shearing Machine, each, \$12.75
Stewart Enclosed Gear Shear-
ing Machine, No. 8, each, \$9.75

Clips, Axle

Regular Styles, list July 1, '05,
80¢ @ 80¢ @ 10%

Cloth and Netting, wire

—See Wire, &c.

Cocks, Brass—**Hardware list:**

Plain Bibbs, Globe, Kerosene,
Racking, Liquor, Bottling,
&c. 75%

Compression Bibbs, 70%

Coffee Mills—

See Mills, Coffee.

Collars, Dog—

Nickel Chain, Walter B. Stevens &
Son's list, 40%

Leather, Walter B. Stevens & Son's
list 40%

Compasses, Dividers, &c.

Ordinary Goods, 75¢ @ 75¢ @ 5%

Conductor Pipe—

L. O. L. to Dealers:
Gal. Steel. Charcoal. Copper.
Northeastern:
70¢ @ 10¢ — 50¢ @ 10¢ 7/2¢ 50¢ @ 10%

Eastern:
75¢ — 50¢ @ 10¢ 7/2¢ 50¢ @ 10%

Central:
75¢ — 60% 50¢ @ 10%

Northwestern:
75¢ — 60% 50¢ @ 10%

Western:
70¢ @ 10¢ — 50¢ @ 12 1/2% 50¢ @ 5%

Tennessee:
70¢ @ 10¢ — 50¢ @ 12 1/2% 50¢ @ 10%

Southern:
70¢ @ 10¢ — 50¢ @ 12 1/2% 50¢ @ 5%

Southwestern:
70¢ — 50¢ @ 5% 50¢ @ 5%

Terms, 60 days: 2% cash 10 days. Fac-
tory shipments generally delivered.

See also Eave Troughs.

Coolers, Water—

L. & G. Mfg. Co.:
Gal. 2 3 4 6 8
Galvanized, ea. \$1.85 \$2.00 \$2.25 \$2.50 \$3.00
Galvanized, Lined, side handles,
Gal. 2 3 4 6 8
Each \$1.95 \$2.15 \$2.40 \$3.30 \$4.15
White Enameled, 10%
Agate Lined, 10%

Coppers' Tools—

See Tools, Coppers'.

Coppers, Soldering—

Soldering Coppers, 3 lb. to pair
and heavier, 21¢; lighter
than 3 lb. to pair, 23 1/2¢

Cord—

Braided, Drab, lb. 35¢

Braided, White, Com., Nos. 8
to 12, 22¢; No. 7, 22 1/2¢; No. 6,
23 1/2¢. In lots of 12 doz. or
over, 1 cent less per pound.

Cable Laid Italian, lb., No. 18, 37¢

Italian, lb., A, No. 18, 25¢; B, 22¢

Common India, lb., 11¢ @ 11 1/2¢

Cotton Sash Cord, Twisted, 18¢ @ 20¢

Patent Russia, lb. 20¢

Cable Laid Russia, lb. 21¢

India Hemp, Br'd'd., lb. 21¢

India Hemp, Twisted, lb. 13¢ @ 14¢

Patent India, Twisted, lb. 17¢

Pearl Braided, cotton, No. 6, 3/4 lb.,
20¢; No. 7, 19 1/2¢; Nos. 8 to 12,
19 1/2¢. In 12 doz. to 100 doz. lots,
25¢; 7, 25 1/2¢; 6, 27 1/2¢.

Harmony Cable Laid Italian, Nos. 7
to 10, lb. 25¢

Pullman:
Wire Sash Cord, 10%

Sash Cord Attachments, per 100, \$2.00

Samson, Nos. 8 to 12:
Braided, 3/4 lb., Drab Cotton,
55¢; Italian Hemp, 40¢ @
50¢; Linen, 65¢; White Cot-
ton, 50¢; Spot Cord, 50¢

Manassetta, White, 40¢

Manassetta, Drab, lb. 45¢

Phoenix, White, Nos. 8 to 12, 27¢

Silver Lake, per lb.:
A, Drab, 45¢; A, White, 40¢;
B, Drab, 40¢; B, White, 35¢;
Italian Hemp, 40¢; Linen, 57 1/2¢

See also Chain and Ribbon.

Wire, Picture—

Full Length, 90¢ @ —

Short Length, 90¢ @ 80¢ @ —

Hendryx Standard Wire Picture Co.:
Turner & Stanton Co. Wire Picture
Cord 90%

Cradles—

Grain 50%

Crayons—

White Round Crayons, Cases, 100
gro., \$8.00, \$8.50, \$9.00 and \$10.00
according to grade.

Zelnicke's Lumber:
White and Purple, Indelible, \$7.50
Blue, Red, Green, Yellow and
Terra Cotta, \$6.50; Black, \$4.50

Giant Lumber, 5/4 in. x 15-16 in.
round, all colors, \$12.00; Indeli-
bles, \$14.00; Blacks, \$10.00

Genuine Soapstone, Metal Workers',
5 in. x 3/4 in. Round, \$2.00; 5 in. x
3/4 in. Square, \$1.75; 5 x 3/4 x 3-16
\$2.50; 5 x 1 1/2 x 3-16, \$3.00

Suremark, Black, \$2.25; Blue, Red
and Yellow, \$2.50

Crooks, Shepherds—

American Fork & Hoe Co.:
Montana 3/4 doz. \$4.50

Crow Bars—See Bars, Crow.**Cultivators—**

American Fork & Hoe Co.:
Victor Garden, 50¢ @ 10%

Cutlery, Table—

International Silver Company:
No. 12 M'd'm Knives, 1847, 3/4 doz. \$3.50
Star, Eagle, Rogers & Hamilton
and Anchor, 3/4 doz. \$3.00

Wm. Rogers & Son, 3/4 doz. \$2.50

Cutters—

H. H. Mayhew Co., 40%

Red Devil, 60%

R. Mfg. Co., 40%

Woodward 50%

Meat and Food—

American Fork & Hoe Co.:
Nos. 401 402 403 404 405 406 407
Each \$5 \$7 \$10 \$12 \$25 \$50 \$60

Enterprise:
Nos. \$10 \$12 \$22 \$22
Each \$2 \$3 \$2.75 \$4.50 \$4 25¢ @ 7 1/2%

No. 302, \$1.50 10¢ @ 7 1/2%

F. S. & W. Co.:
Ideal 10¢ @ 10¢ @ 5%

Hales 60¢ @ 5%

Little Giant, 3/4 doz. 40¢ @ 50%

Nos. 305 310 312 320 322
\$3.00 \$4.00 \$4.00 \$7.00 \$8.00

New Trump Co. 605, 3/4 doz. \$24.00
40%

Russwin Food, No. 1, \$24.00; No. 2,
\$27.00; 3, \$42.00 15¢ @ 10¢ @ 10%
Enterprise Beef Bavers, \$15.00
\$18.00

Siaw and Kraut—

Henry Diston & Sons:
Siaw and Kraut Cutters, 35%
Corn Graters, 30%
J. M. Mast Mfg. Co.:
Siaw Cutters, 1 Knife, 3/4 doz. \$3.00
Combined Siaw Cutter and Corn
Grater 3/4 doz. \$4.00

10-lb. cans, 10 in case, 7¢ 7¢ 8¢
10-lb. cans, less than 10, 10¢ 10¢ 8¢
Less quantity, 10¢ 10¢ 8¢
NOTE.—In lots 1 to 3 tons a discount of 10% is given.

Extensions, Bit—

Ford's Auger Bit Extensions, 40¢ 50¢

Extractors, Lemon Juice—

—See Squeezers, Lemon.

Fasteners, Blind—

Zimmerman's Jap'd and Galv., 50 & 55¢; Bronze and Plated, 50¢
Walling's, 50¢
Upson's Patent, 40¢

Cord and Weight—

Ives, 10¢ gro., 10¢ 10¢ 10¢
Titan, 10¢ gro., 10¢ 10¢ 10¢

Corrugated—

Acme Corrugated Fasteners, 70¢

Faucets—

Cork Lined, 50¢ 100¢ 60¢
Metallic Key, Leather Lined, 60¢ 100¢ 70¢

Red Cedar, 40¢ 50¢ 100¢ 10¢ 5¢
Petroleum, 70¢ 100¢ 75¢

B. & L. B. Co., 60¢ 100¢ 70¢

Star, 60¢

West Lock, 50¢ 100¢

John Sommer's Peerless Tin Key, 40¢

John Sommer's Boss Tin Key, 40¢

John Sommer's Victor Mtl. Key, 50¢

John Sommer's Duplex Metal Key, 60¢

John Sommer's Diamond Lock, 40¢

John Sommer's I. X. L. Cork Lined, 50¢

John Sommer's Reliable Cork Lined, 50¢ 100¢

John Sommer's Chicago Cork Lined, 60¢

John Sommer's No Brand Cedar, 40¢

John Sommer's Perfection Cedar, 40¢

Self Measuring, 40¢ 100¢

Enterprise, Self Measuring and Pump, 40¢ 100¢

Lane's, 40¢ 100¢

National Measuring, 40¢ 100¢

Felloe Plates—

See Plates, Felloe.

Files—Domestic—

List Nov. 1, 1899.

Best Brands, 70¢ 100¢ 75¢ 10¢

Standard Brands, 75¢ 100¢ 80¢

Lower Grade, 75¢ 100¢ 100¢ 80¢ 10¢

Gold Medal, 70¢

McCaffrey's American Standard, 60¢ 100¢ 10¢

Imported—

Stude's Tapers, Studs' List, July 24, '97, 33¢ 100¢

Fixtures, Fire Door—

Richards Mfg. Co., 104

Universal, No. 103; Special, No. 104, 33¢ 75¢

Fusible Links, No. 96, 50¢

Expansion Bolts, No. 107, 60¢ 100¢

Grindstone—

Inch, 15 17 19 21 24

Per doz., 33.60 3.85 4.15 4.61

Peck, Stow & Wilcox Co., 15 17 19 21 24

In, 4.00 4.40 4.75 5.50 6.50, 30¢

Reading Hardware Co., 40¢

Fodder Squeezers—

See Compressors.

Forks—

American Fork & Hoe Co., 70¢ 5¢

Iowa Dig-Ezy Potato, 45¢ 20¢ 12¢

Hay, Regular, 4-time, 60¢ 7¢ 45¢

Champion, Hay, 60¢ 20¢

Acme, Hay, 60¢ 20¢

Manure, Regular, 4-time, 65¢ 5¢

Manure, Regular, 5 and 6 time, 70¢

Champion, Manure, 65¢ 5¢

Columbia, Manure, 70¢

Acme, 4-time, 60¢ 10¢ 5¢

Round Shoulder Header, 4-time, 65¢

Champion, Header, 65¢

Dakota, Header, 65¢

Kansas Header, 65¢

Wood, Barley, 35¢ 5¢

Steel, Barley, 65¢

Columbia, Spading, 70¢ 7¢ 45¢

Frames—Wood Saw—

White, 8' 9' Bar, per doz. 75¢ 100¢

Red, 8' 9' Bar, per doz. 1.00¢ 1.25

Red, Dbl. Brace, per doz. 1.40¢ 1.60

Freezers, Ice Cream—

Qt., 1 2 3 4 6

Each, 1.25 1.60 1.90 2.20 2.50

Fruit and Jelly Presses—

See Presses, Fruit and Jelly.

Fry Pans—See Pans, Fry.

Fuse—Per 1000 Feet.

Hemp, 3.25

Cotton, 3.20

Waterproof Sgl. Taped, 3.65

Waterproof Dbl. Taped, 4.40

Waterproof Tpl. Taped, 5.15

Gates, Molasses and Oil—

Stebbins' Pattern, 80¢ 80¢ 45¢

Gauges—

Marking, Mortise, 50¢ 50¢ 10¢

Chapin-Stephens Co., 50¢ 50¢ 10¢

Marking, Mortise, 50¢ 50¢ 10¢

Diston's Marking, Mortise, 50¢ 50¢ 10¢

Wire, Brown & Sharpe's, 35¢

Wire, Morse's, 25¢

Wire, P. S. & W. Co., 35¢

Gimlets—Single Cut—

Numbered assortments, per gro.

Nail, Metal, No. 1, 40¢; No. 2, 50¢

Spike, Metal, No. 1, 40¢; No. 2, 50¢

Nail, Wood Handled, No. 1, 40¢

Spike, Wood Handled, No. 1, 40¢

44¢ 50¢; 2, 44¢

Glass, American Window

See Trade Report.

Glasses, Level—

Chapin-Stephens Co., 50¢ 65¢ 10¢

Glue, Liquid Fish—

Bottles or Cans, with Brush, 25¢ 100¢ 50¢

Elwell's, 50¢

Grease, Axle—

Common Grade, 10-lb. pails, ea. 50¢

Dixon's Everlasting, 10-lb. pails, ea. 50¢

2 lb. boxes, 1 doz., 1 lb., 1.20

2 lb. boxes, 1 doz., 1 lb., 1.20

Helmet Hard Oil, 25¢

Griddles, Soapstone—

Pike Mfg. Co., 33¢ 33¢ 10¢

Grinders—

Pike Mfg. Co., 1, 2, 3; Pyko Primo, Pyko Pear-

less; Pyko Spiral (foot power), 33¢

Mover Knife and Tool, 50¢ 40¢ 10¢

Royal Mfg. Co., 1, 2, 3; Pyko Primo, Pyko Pear-

less; Pyko Spiral (foot power), 33¢

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Royal Mfg. Co., 1, 2, 3; Pyko Primo, Pyko Pear-

less; Pyko Spiral (foot power), 33¢

Mover Knife and Tool, 50¢ 40¢ 10¢

W. A. Zelnicker Supply Co.

Hammer, 12 in., 2.00; 18 in., 2.50; 24 in., 3.00; 30 in., 3.50; 36 in., 4.00; 42 in., 4.50; 48 in., 5.00; 54 in., 5.50; 60 in., 6.00; 66 in., 6.50; 72 in., 7.00; 78 in., 7.50; 84 in., 8.00; 90 in., 8.50; 96 in., 9.00; 102 in., 9.50; 108 in., 10.00; 114 in., 10.50; 120 in., 11.00; 126 in., 11.50; 132 in., 12.00; 138 in., 12.50; 144 in., 13.00; 150 in., 13.50; 156 in., 14.00; 162 in., 14.50; 168 in., 15.00; 174 in., 15.50; 180 in., 16.00; 186 in., 16.50; 192 in., 17.00; 198 in., 17.50; 204 in., 18.00; 210 in., 18.50; 216 in., 19.00; 222 in., 19.50; 228 in., 20.00; 234 in., 20.50; 240 in., 21.00; 246 in., 21.50; 252 in., 22.00; 258 in., 22.50; 264 in., 23.00; 270 in., 23.50; 276 in., 24.00; 282 in., 24.50; 288 in., 25.00; 294 in., 25.50; 300 in., 26.00; 306 in., 26.50; 312 in., 27.00; 318 in., 27.50; 324 in., 28.00; 330 in., 28.50; 336 in., 29.00; 342 in., 29.50; 348 in., 30.00; 354 in., 30.50; 360 in., 31.00; 366 in., 31.50; 372 in., 32.00; 378 in., 32.50; 384 in., 33.00; 390 in., 33.50; 396 in., 34.00; 402 in., 34.50; 408 in., 35.00; 414 in., 35.50; 420 in., 36.00; 426 in., 36.50; 432 in., 37.00; 438 in., 37.50; 444 in., 38.00; 450 in., 38.50; 456 in., 39.00; 462 in., 39.50; 468 in., 40.00; 474 in., 40.50; 480 in., 41.00; 486 in., 41.50; 492 in., 42.00; 498 in., 42.50; 504 in., 43.00; 510 in., 43.50; 516 in., 44.00; 522 in., 44.50; 528 in., 45.00; 534 in., 45.50; 540 in., 46.00; 546 in., 46.50; 552 in., 47.00; 558 in., 47.50; 564 in., 48.00; 570 in., 48.50; 576 in., 49.00; 582 in., 49.50; 588 in., 50.00; 594 in., 50.50; 600 in., 51.00; 606 in., 51.50; 612 in., 52.00; 618 in., 52.50; 624 in., 53.00; 630 in., 53.50; 636 in., 54.00; 642 in., 54.50; 648 in., 55.00; 654 in., 55.50; 660 in., 56.00; 666 in., 56.50; 672 in., 57.00; 678 in., 57.50; 684 in., 58.00; 690 in., 58.50; 696 in., 59.00; 702 in., 59.50; 708 in., 60.00; 714 in., 60.50; 720 in., 61.00; 726 in., 61.50; 732 in., 62.00; 738 in., 62.50; 744 in., 63.00; 750 in., 63.50; 756 in., 64.00; 762 in., 64.50; 768 in., 65.00; 774 in., 65.50; 780 in., 66.00; 786 in., 66.50; 792 in., 67.00; 798 in., 67.50; 804 in., 68.00; 810 in., 68.50; 816 in., 69.00; 822 in., 69.50; 828 in., 70.00; 834 in., 70.50; 840 in., 71.00; 846 in., 71.50; 852 in., 72.00; 858 in., 72.50; 864 in., 73.00; 870 in., 73.50; 876 in., 74.00; 882 in., 74.50; 888 in., 75.00; 894 in., 75.50; 900 in., 76.00; 906 in., 76.50; 912 in., 77.00; 918 in., 77.50; 924 in., 78.00; 930 in., 78.50; 936 in., 79.00; 942 in., 79.50; 948 in., 80.00;

Hoes— Eye—

Scovill and Oval Pattern
60¢ 10¢ 10¢ 10¢ 10¢
Grub, list Feb. 23, 1899,
70¢ 10¢ 70¢ 10¢ 10¢
D. & H. Scovill..... 27½¢
Am. Fork & Hoe Co. (Scovill Pat-
tern)..... 60¢ 25¢

Handled—

Cronk's Weeding, No. 1, \$2.00; No. 2, \$2.50
Star Double Bit..... \$2.50
American Fork & Hoe Co.:
Regular, Cotton..... 75¢ 10¢ 5¢ 2½¢
Crescent, Cultivator..... 75¢ 2½¢
Mattcock, Senior..... 70¢
Mattcock, Junior..... 70¢
Sprouting..... 50¢
Tobacco, Harper's..... 60¢ 15¢ 10¢ 5¢
Warren..... 65¢ 10¢ 10¢ 5¢
Iranhoe..... 65¢ 15¢ 10¢ 5¢
Cultivator, B B 6..... 70¢ 10¢ 10¢ 5¢
Cultivator, B B 6½..... 70¢ 10¢ 10¢ 5¢
Weeding, A C 6..... 72¢ 10¢ 10¢ 5¢
Seattle, Lightning..... 60¢ 5¢

Hoisting Apparatus—

See **Machines, Hoisting.**

Holders— Bit—

Angular, ½ doz., \$21.00..... 45¢ 10¢

Door—

Bardsley's, Iron, 40%; Brass and
Bronze..... 25¢
Empire..... 50¢
Pullman..... 25¢
Richards Mfg. Co., No. 117, Ever-
ready, 40%; No. 118, 119, Sure
Grip..... 50¢
Superior..... 40¢

File and Tool—

Nicholson File Holders and File
Handles..... 33½¢ 40¢

Fruit Jar—

Triumph Fruit Jar Holder, ½ gross,
\$18.00; ½ doz., \$2.00

Trace and Rein—

Fernald Double Trace Holder, ½ doz.,
pairs..... \$1.25
Dash Rein Holder, ½ doz., \$1.25

Hones—Razor—

Pike Mfg. Co., Belgian and Swaty,
50%; German..... 33½¢

Hooks—Cast Iron—

Bird Cage, Reading..... 40¢
Clothes Line, Reading List..... 40¢
Coat and Hat, Reading..... 45¢ 20¢
Coat and Hat, Wrightsville..... 60¢ 5¢
Harness, Reading List..... 40¢

Wire—

Belt, Nos. 1 to 15..... 75¢ 10¢ 90¢
Wire C. & H. Hooks..... 80¢ 80¢ 10¢
Bradley Metal Clasp Wire, Coat and
Hat..... 75¢ 10¢ 80¢
Columbian Hdw. Co., Gem..... 75¢ 10¢
Parker Wire Goods Co., King..... 75¢ 10¢
Wire Goods Co.:
Acme..... 60¢ 10¢
Crown..... 75%; Chair, 85¢ 10¢; V
Brace, 15%; Chair Harness, 50%;
Ceiling, 75%.

Wrought Iron—

Box, 6 in., per doz., \$0.90; 8 in.,
\$1.15.

Cotton..... doz. \$1.25 to \$1.50
Wrought Staples, Hooks, etc.—
See **Wrought Goods.**

Miscellaneous—

Hooks, Bench, see **Stops, Bench.**

Bush, Light, doz., \$6.20; Medium,
\$6.75; Heavy, \$7.05

Grass, best, all sizes, per doz.,
\$2.75 to \$3.00

Grass, common grades, all sizes,
per doz., \$1.25 to \$1.40

Whistletree..... lb. 5¢ 40¢

Hooks and Eyes:
Brass..... 60¢ 60¢ 10¢
Malleable Iron..... 70¢ 70¢ 10¢

Covert Mfg. Co. Gate and Seattle
Hooks..... 40¢

Turner & Stanton Co. Cup and
Shoulder..... 50¢ 10¢

Bench Hooks—See **Bench Stops.**

Corn Hooks—See **Knives, Corn.**

Horse Nails—

See **Nails, Horse.**

Horseshoes—

See **Shoes, Horses.**

Hose, Rubber—

Garden Hose, ¾ inch:
Competition..... ft. 6¢ 40¢

3-ply Guaranteed..... ft. 9¢ 40¢

4-ply Guaranteed..... ft. 9¢ 12¢

Cotton Garden, ¾ in., coupled:
Low Grade..... ft. 8¢ 9¢

Fair Quality..... ft. 10¢ 11¢

Irons— Sad—

From 4 to 10..... lb. 3¼¢ 25¢

B. B. Sad Irons..... lb. 3¼¢ 35¢

Mrs. Potts, cents per set:
Nos. 50 55 60 65

Jap'd Caps..... 50 55 60 65

Tin'd Caps..... 91 88 1.01 98

New England Pressing..... lb. 3¼¢ 4¢

Bar and Corner—

Richards Mfg. Co., Bar, 60¢ 10%;
Corner..... 60¢

Pinking—

Pinking Irons..... doz. 60¢ 65¢

Irons, Soldering

See **Coppers.**

Jacks, Wagons—

Covert Mfg. Co.:
Auto Screw..... 30¢ 2½¢; Steel, 45¢

Lockport..... 50¢

Lane's Steel..... 30¢ 5¢

Richards' Tiger Steel No. 130..... 50¢ 10¢

Smith & Hemenway Co.'s..... 25¢

Ladder—
Richards Mfg. Co., Ladder Jacks, 5 X

Jointers—

Pike Mfg. Co., Saw Jointers, \$7.00..... 40%

Kettles—

Brass, Spun, Plain..... 20¢ 25¢
Enameled and Cast Iron—See **Ware,**
Hollow.

Knives—

Butcher, Kitchen, &c.—
Foster Bros' Butcher, &c..... 30%

Wilkinson Shear & Cutlery Co..... 60%

Corn—

Columbian Cutlery Co., Wilcutt
Brand Knives and Hooks..... 60%

American Fork & Hoe Co.:
Easy Cut, ½ doz., No. 19 C H..... \$2.10

Easy Cut, ½ doz., No. 19 B C H..... \$2.20

Acme, ½ doz..... \$2.35

Dent, ½ doz..... \$2.35

Adjustable, Serrated, ½ doz..... \$1.90

Serrated, ½ doz..... \$1.85

Yankee, No. 1 C H..... \$1.35

Yankee, No. 2 C H..... \$1.15

Drawing—

Standard List..... 80¢ 10¢ 40%

C. E. Jennings & Co., Nos. 45, 46,
25¢ 7½¢

Jennings & Griffin, Nos. 41, 42,
60¢ 7½¢

Swan's..... 60¢ 7½¢

Watrous..... 16%

L. & I. J. White..... 20¢ 5¢ 25¢

Hay and Straw—

Serrated Edge, per doz. \$5.00 to \$5.50

Iwan's Sickle Edge..... ½ doz. \$0.50

Iwan's Serrated..... ½ doz. \$1.00

Miscellaneous—

Farriers'..... doz. \$2.60 to \$3.55

Wostenholm's..... ½ doz. \$3.00 to \$3.25

Knobs—

Base, 2½-inch, Birch or Maple,
Rubber Tip..... gro. \$1.25 to \$1.40

Carriage, Jap., Drive, all sizes,
gro. 35¢ 40¢

Door, Mineral..... doz. 65¢ 70¢

Door, Por. Jap'd..... doz. 70¢ 75¢

Door, Por. Nickel..... doz. \$2.05 to \$2.15

Bardsley's Wood Door, Shutters, &c. 15%

Lacing, Leather—

See **Beltting, Leather**

Ladders, Store, &c.—

Lane's Store..... 25%

Myers' Noiseless Store Ladders..... 50%

Richards Mfg. Co.:
Improved Noiseless, No. 112..... 50%

Climax Shelf, No. 113..... 50%

Trolley, No. 100..... 50%

Ladies, Melting—

L. & G. Mfg. Co., Melting and
Plumbers'..... 25%

P. S. & W..... 40¢ 10¢

Reading..... 60%

Lamps—

Hammer's M. I. Hand..... 40%

Lanterns—Tubular—

Regular, No. 0..... doz. \$3.50 to \$4.00

Side Lift, No. 0..... doz. \$4.00 to \$4.50

Hinge Globe, No. 0..... doz. \$4.00 to \$4.50

Other Styles..... 40¢ 40¢ 10%

Bull's Eye Police—

3-inch..... \$3.75 to \$4.00

Latches—Thumb—

Roggin's Latches, Jap'd, with
Screws..... doz. 35¢ 40¢

Door—

Cronk & Carrier Mfg. Co., No. 101,
½ doz. \$2.00

Richards' Bull Dog, Heavy, No. 125,
125..... 50¢ 5¢

Richards' Trump, No. 127..... \$1.50

Leaders, Cattle—

Small..... doz. 50¢; large, 60¢

Covert Mfg. Co.:
Cotton, 45%; Hemp, 45%; Jute,
35%; Sisal, 20%.

Leathers, Pump—

See **Pumps—**

Lifters, Transom—

R. & E..... 10%

Lines—

Wire Clothes, Nos. 18 19 20
100 feet..... \$2.30 1.95 1.75

75 feet..... \$1.95 1.65 1.50

Samson Cordage Works:
Solid Braided Chalk, Nos. 0 to 3, 49%

Solid Braided Masons'..... 30%

Silver Lake Braided Chalk, No. 0,
\$6.00; No. 1, \$6.50; No. 2, \$7.00; No. 3,
\$7.50..... ½ gr. 20%

Masons' Lines, Shade Cord, &c.:
White Cotton, No. 3½, \$1.50; No. 4,
\$2.00; No. 4½, \$2.50; Colors, No. 3½,
\$1.75; No. 4, \$2.25; No. 4½, \$2.75;
Linen, No. 3½, \$2.50; No. 4, \$3.50;
No. 4½, \$4.50..... 20%

Tent and Awning Lines: No. 5,
White Cotton, \$7.50; Drab Cotton,
\$8.50..... 20%

Clothes Lines, White Cotton: 30 ft.,
\$2.75; 60 ft., \$3.25; 75 ft., \$3.75; 75
ft., \$4.00; 80 ft., \$4.25; 90 ft., \$4.75;
100 ft., \$5.25..... 20%

Turner & Stanton Co.:
Solid Braided Chalk, Masons' and
Awning Lines..... 40%

Clothes Lines, White Cotton..... 20%

Shade Cord, Cotton or Linen..... 20%

Locks— Cabinet—
Cabinet Locks..... 33½¢ 35%

Door Locks, Latches, &c.—
NOTE—Net Prices are very often made
on these goods.
Reading Hardware Co..... 40%

R. & E. Mfg. Co..... 15%

Padlocks—
R. & E. Mfg. Co. Wrought Steel and
Brass..... 75¢ 10%

Sash, &c.—

Ives' Patent:
Crescent..... 10%

Automatic Gravity Metal Sash, ½
gro., \$19.50..... 10%

Window Ventilating..... 10%

Pullman Patent Ventilating Lock..... 25%

Reading Sash Locks..... 40%

Taylor Mfg. Co., Perfect Ventilating,
½ doz..... \$0.75 to \$1.00

Machines—Boring—

Com. Up'r't, without Augers..... \$2.00 to \$2.25

Com. Angl'r, without Augers..... \$2.25 to \$2.50

Ford Auger Bit Co..... \$2.00

Jennings' Nos. 1 and 4..... 25¢ 7½¢

Millers' Falls..... 5.75

Snell's, Upright, \$2.65; Angular, \$2.90

Swan's Improved..... 10¢ 10%

Corking—

Reisinger Invincible Hand Power.....
½ doz. \$48.00

Fence—

Williams' Fence Machines..... each, \$5.50

Hoisting—

Moore's Anti-Friction Chain Hoist..... 30%

Moore's Hand Hoist, with Lock
Brake..... 20%

Moore's Cyclone High Speed Chain
Hoist..... 25%

Ice Cutting—

Chandler's..... 12½%

Washing

Boys Washing Machine Co.: Per doz.
Boss Rotary..... \$5.00

Champion Rotary Banner No. 1..... \$5.00

Standard Champion No. 1..... \$5.00

Standard Perfection..... \$27.00

Cincinnati Square Western..... \$33.00

Uneda American, Round..... \$33.00

Mallets—

Hickory..... 45¢ 50¢

Lignumvite..... 45¢ 50¢

Tinners' Hickory and Apple-
wood..... doz. 45¢ 50¢

Mangers, Stable—

Swett Iron Works..... 60%

Mats, Door—

Acme Flexible Steel..... 50%

Elastic Steel (W. G. Co.), new list..... 50%

Mattocks—

See **Picks and Mattocks.**

Milk Cans—See Cans, Milk.**Mills, Coffee, &c.—**

Enterprise Mfg. Co.:
Coffee..... 20¢ 25%

Shell and Corn..... 25¢ 10%

National List Jan. 1, 1902..... 30%

Parker's Columbia and Victoria..... 33½%

Parker's Box and Side..... 50¢ 10%

Swift, Lane Bros. Co..... 30%

Motors, Water—

Divine's Red Devil..... 30%

\$2.50 3.50 10.00 15.00..... 33½%

No. 1 2 3 4

Lippincott's:
No..... 1 2 3 4

\$2.50 3.50 10.00 15.00..... 33½%

Pike Mfg. Co., Tool and Knife
Grinding..... 33½%

Mowers, Lawn—

NOTE—Net prices are generally quoted
cheapest, 10-in., \$2.00; advance
10¢ for each size.

Cheap, 10-in., \$2.25; advance 15¢
20¢ for each size.

Better Grade, 10-in., \$3.00; ad-
vance 25¢ for each size.

High Grade..... \$4.50 4.75 5.00 5.25

Continental..... 60%

Great American..... 70%

Great American Ball B'r'g, new list..... 70%

Quaker City..... 70%

Pennsylvania..... 60%

| | |
|-----------------------|-------------|
| Livingston Nail Co.: | |
| Daisy | doz. \$4.00 |
| Little Star | doz. \$5.00 |
| Rocking Table | doz. \$6.20 |
| Reading Hardware Co.: | |
| Advance | doz. \$4.00 |
| Baldwin | doz. \$4.00 |
| Reading 72 | doz. \$3.25 |
| Reading 78 | doz. \$6.25 |

Orange—

| | |
|----------------------|--------------|
| Goodell Co., Success | each \$20.00 |
| Potato— | |
| Saratoga | doz. \$7.00 |
| White Mountain | doz. \$6.00 |

Picks and Mattocks—

(List Jan., 1908.)

| | |
|--------------------------------|--------------------|
| List | 75¢10% |
| Cronk's Handled Garden Mattock | doz., \$3.00, 33½% |

Pinking Irons—

See Irons, Pinking.

Pins, Escutcheon—

| | |
|-------------------------|-----------|
| Brass | 50¢50¢10% |
| Iron, list Nov. 11, '85 | 60¢60¢10% |

Pipe, Cast Iron Sell—

| | |
|------------------------------|-----|
| Eastern Prices: | |
| Standard, 2-6 in. | 68% |
| Extra Heavy, 2-6 in. | 74% |
| Fittings, Standard and Heavy | 80% |

Pipe, Merchant—

Carloads to Consumers:

Steel. Iron.

Blk. Galv. Blk. Galv.

| | |
|-----------------|--|
| 1/2 and 1/4 in. | |
| 1/2 in. | |
| 1 in. | |
| 1 1/2 in. | |
| 2 in. | |
| 2 1/2 in. | |
| 3 in. | |
| 4 in. | |
| 5 in. | |
| 6 in. | |
| 7 in. | |
| 8 in. | |
| 9 in. | |
| 10 in. | |
| 12 in. | |

See Trade Report

Pipe, Vitrified Sewer—

Carload lots.

Standard Pipe and Fittings, 3

to 2 1/2 in., f.o.b. factory:

First-class 87%

Second-class 90%

Pipe, Stove—

| | |
|-----------------------------------|-----------------|
| Edwards' Nested: | Per 100 joints. |
| 5 in., Standard Blue | \$6.25 |
| 6 in., Standard Blue | 6.75 |
| 7 in., Standard Blue | 7.00 |
| 8 in., Standard Blue | 7.50 |
| 9 in., Standard Blue | 8.00 |
| 10 in., Standard Blue | 8.50 |
| 12 in., Standard Blue | 9.50 |
| Wheeler Corrugating Co.'s Nested: | |
| 5 in., Uniform Color | \$5.00 |
| 6 in., Uniform Color | 6.40 |
| 7 in., Uniform Color | 7.40 |

Planes and Plane Irons—

Wood Planes—

| | |
|---------------------------|----------|
| Bench, first qual. | 30¢30¢5% |
| Bench, second qual. | 30¢40¢5% |
| Molding | 25¢25¢5% |
| Chapin-Stephens Co.: | |
| Bench, First Quality | 30% |
| Bench, Second Quality | 25% |
| Molding and Miscellaneous | 25% |
| Toy and German | 30% |
| Union | 60% |

Iron Planes—

Chaplin's Iron Planes 60%

Plane Irons—

| | |
|------------------------------|-----------|
| Wood Bench Plane Irons, list | |
| Dec. 12, '08 | 25% |
| Buck Bros. | 30% |
| Chapin-Stephens Co. | 25% |
| Union | 60% |
| L. & J. White | 20¢50¢25% |

Planters, Corn, Hand—

Kohler's Eclipse doz. \$7.50

Plates—

| | |
|------------------------------------|---|
| Felloc | doz. 3¢1/4¢ |
| Avery Stamping Co.: | |
| Standard Wrot. Steel Felloc Plates | 100 lb. kegs, per 100 lb. 1/4 in. to 1 1/2 in. \$1.00 net; 1 1/2 in. to 2 in., inclusive, \$1.75 net. |

Steel Pipe Hook—

Never-Break 75¢10%

Pliers and Nippers—

| | |
|-----------------------|-----------------------------|
| Button Pliers | 75¢50¢10¢5% |
| Gas Burners, per doz. | 5 in., \$1.25 |
| | 6 in., \$1.45, \$1.50 |
| Gas pipe | 7 8 10 12 in. |
| | \$2.00 \$2.25 \$2.75 \$3.50 |

Acme Nippers 50¢5%

Cronk & Carrier Mfg. Co.:

American Button 80%

Improved Button 75¢10%

Cronk's 60%

No. 50 Livemen's 50%

Stub's Pattern 45%

Combination and others 33½%

Elmore Tool Mfg. Co.:

Gas Pliers 70%

Wire and Cutting Pliers 75%

Heller's Farriers' Nippers, Pincers and Tools 40¢50¢10¢15%

P. & W. Tinner's Cutting Nippers 40%

Swedish Side End and Diagonal Cutting Pliers 50%

Utica Drop Forge & Tool Co.:

Pliers and Nippers, all kinds 40%

Plumbs and Levels—

Chapin-Stephens Co.:

Plumbs and Levels 30¢30¢10%

Chaplin's Imp. Brass Cor. 40¢40¢10%

Pocket Levels 30¢30¢10%

Extension Sights 30¢30¢10%

Mechanists' Levels 40¢40¢10%

Diston's Plumb & Levels 60¢10%

Diston's Pocket Levels 60¢10%

Stanley's Dux 30%

Woods' Extension 35%

Points, Glaziers—

Bulk and 1-lb. papers 1 lb. 9¢

1/2-lb. papers 1 lb. 9¢

1/4-lb. papers 1 lb. 10¢

Police Goods—

| | |
|----------------------|----------|
| Manufacturers' Lists | 25¢25¢5% |
| Tower's | 25% |

Polish—Metal, Etc—

| | |
|---------------------------------------|---|
| Ladd Co.: | |
| Putzade Liquid | gro. 1/4 pts. \$12.00; 1 pts. \$20.00; 1 qts. \$40.00 |
| doz. 1/2 gals. | \$6.35; 1 gal. \$12.00 |
| Prestoline Liquid, No. 1 (1/4 pt.) | doz. \$3.00; No. 2 (1 qts.) \$9.00 |
| Prestoline Paste | doz. \$4.00 |
| George William Hoffman: | |
| U. S. Metal Polish Paste, 3 oz. boxes | doz. 50¢; 1 lb. each, \$4.50 |
| 1/4 lb. boxes | doz. \$1.25; 1 lb. boxes, \$2.25 |
| U. S. Liquid, 3 oz. cans | doz., \$1.25 |
| Barkeepers' Friend Metal Polish | doz., \$1.75 |

Stove—

| | |
|--|--------------|
| Black Eagle Benzine Paste, 5 lb. cans | doz. \$10¢ |
| Black Eagle, Liquid, 1/4 pt. cans | doz. 75¢ |
| Black Jack Paste, 1/4 lb. cans | gr. \$9.00 |
| Black Kid Paste, 5 lb. cans | each, \$0.65 |
| Ladd's Black Beauty Liquid, per 100 tins | \$6.75 |
| Joseph Dixon | gr. \$5.75 |
| Dixon's Plumbago | gr. \$5.75 |
| Pireside | gr. \$2.50 |
| Gem | gr. \$1.50 |
| Japanese | gr. \$3.50 |
| Jet Black | gr. \$3.50 |
| Peerless Iron Enamel, 10 oz. cans | doz. \$1.50 |

Window Polish—

| | |
|-----------------------------|---|
| Benj. L. Forbes: | |
| Glasbrite, No. 2, gal pails | doz., \$24.00; each, \$2.50; 1 lb. cans, each, \$0.75 |
| Glasbrite Powder, bbls. | doz. \$2.00 |

Peppers, Corn—

| | |
|------------------|---------------------------|
| 1 qt. Square | doz. \$9.80; gro. \$3.75 |
| 1 qt. Round | doz. \$9.90; gro. \$10.00 |
| 1 1/2 qt. Square | doz. \$1.20; gro. \$12.00 |
| 2 qt. Square | doz. \$1.50; gro. \$15.00 |

Post Hole and Tree Augers and Diggers—

See also Diggers, Post Hole, &c.

Posts, Steel—

| | |
|-------------------------------------|-------------|
| Steel Fence Posts, each, 6 ft., 40¢ | |
| 6 ft. 48¢; 7 ft., 50¢ | |
| Steel Hitching Posts | each \$1.30 |

Potato Parers—

See Parers, Potato.

Pots, Glue—

| | |
|----------|-------------|
| Enameled | doz. \$0.40 |
| Tinned | doz. \$0.40 |

Powder—

| | |
|--------------------------|------------------|
| Black Sporting: | |
| Kegs (25 lb.) | \$5.00 to \$5.50 |
| Half Kegs (12 1/2 lb.) | \$2.75 to \$3.00 |
| Quarter Kegs (6 1/4 lb.) | \$1.50 to \$1.65 |

Canisters, pounds .25

Canisters, 1/2 pounds .15

Canisters, 1/4 pounds .12

NOTE.—Prices vary according to territory.

King's Semi-Smokeless:

Keg (25 lb. bulk) \$6.50

Half Keg (12 1/2 lb. bulk) \$3.50

Quarter Keg (6 1/4 lb. bulk) \$1.90

Case 21 (1 lb. cans bulk) \$8.50

Half case (1 lb. cans bulk) \$4.50

King's Smokeless: Shot Gun, Rifle, Keg (25 lb. bulk) \$12.00 \$15.00

Half Keg (12 1/2 lb. bulk) 6.25 7.75

Quarter Keg (6 1/4 lb. bulk) 3.25 4.00

Case 21 (1 lb. cans bulk) 14.00 17.00

Half case 12 (1 lb. c. bk.) 7.25 8.75

Presses—

Fruit, Wine and Jelly—

Enterprise Mfg. Co. 20¢25%

Seal Presses—

Morrill's No. 1, doz. \$20.00 50%

Pruning Hooks and Shears

See Shears.

Pullers, Nail, Etc.—

Cyclops 50%

Elmore Tool Mfg. Co.:

Drop Forged Tack Pullers 10%

Nail Pullers 40%

Miller's Falls, No. 3, doz. 33½¢10%

Morrill's No. 1, Nail Puller, doz. \$20.00 50%

Pearson No. 1, Cyclone Spike Puller, each \$30.00 50%

The Seranton Co. Case Lots: \$5.50

No. 3B (small) \$5.00

Smith & Hemenway Co.:

Diamond B. 70%

Giant 50%

Staple Pullers, Utica and Davidson 60%

Taylor Mfg. Co., Sampson Tack, doz. \$9.50

Pulleys, Single Wheel—

Inch 1/2 1 1/4 2 3

Avining or Tackle, doz. \$0.30 .45 .60 1.00

Hay Fork, Steel or Solid Eye, doz., 4 in., \$1.25; 5 in., \$1.55

Inch 2 2 1/2 3 4

Hot House, doz., \$0.65 .85 1.20

Inch 1/4 1/2 3/4 2

Screw, doz. \$0.16 .19 .23 .30

Inch 1/2 3/4 1 2 3 4

Slide, doz. \$0.25 .40 .55 .60

Inch 1/2 3/4 1 2 3 4

Sash Pullers—

Common Frame; Square or Round End, per doz., 1 1/4 and 2 in. \$7.00 to \$8.00

Auger Mortise, no Face Plate, per doz., 1 1/4 and 2 in. \$8.00 to \$14

Acme, No. 35, 1 1/2 in., 19¢; 2 in., 30¢

American Pulley Co.:

| | |
|--|---|
| Wrought Steel American Plain Axle | 50¢10% |
| Wrought Steel, Eagle | doz. 1 1/2 in., 17¢; 2 in., 20¢; 2 1/2 in., 27¢ |
| Top Notch, Electrically Welded | doz. 3 and 4, 19¢ |
| Common Sense | doz. 20¢ |
| Merit | doz. 24¢ |
| Fox-All-Steel, Nos. 3 and 7, 2 in. | doz. 50% |
| Grand Rapids All Steel Noiseless | 50% |
| Niagara, No. 25, 1 1/2 in., 19¢ | 2 |
| No. 26 Troy, 1 1/2 in., 14¢; 2 in., 16¢ | 2 |
| Star, No. 26, 1 1/2 in., 19¢; 2 in., 20¢ | 2 |
| Tackle Blocks—See Blocks. | |

Pumps—

| | |
|---|-------------|
| Clatern | 60% |
| Pitcher Spout | 75¢10¢5¢80 |
| Wood Pumps, Tubing, &c. | 50% |
| Barnes Dbl. Acting (low list) | 50% |
| Barnes Pitcher Spout | 80% |
| Contractors' Rubber Diaphragm, No. 2, B. & L. Block Co. | \$6.00 |
| Daisy Spray Pump | doz. \$6.50 |
| Flint & Walling's Fast Mail Hand (low list) | 50¢5% |
| Flint & Walling's Fast Mail (low list) | 50¢5% |
| Flint & Walling's Tight Top | 80% |
| Pitcher | 80% |
| National Specialty Mfg. Co., Measuring, Nos. 2, \$6.00; 3, \$5.50 | 30% |
| Myers' Pumps (low list) | 30% |
| Myers' Power Pumps | 50% |
| Myers' Spray Pumps | 50% |

Pump Leathers—

Plunger and Valve Leathers—Per

gro.:

No. 1 2 3 4

\$5.00 6.00 7.00 8.00

Cup Leathers—Per 100:

Inch. 2 1/2 3 3 1/4 4

\$5.00 7.00 9.00 12.00

Punches—

Saddlers' or Drive, good, doz. 50¢75¢

Spring, single tube, good qual. 175

Revolving (1/2 tubes) doz. \$3.50

Bemis & Call Co.'s Cast St'l Drive 50%

Elmore Tool Mfg. Co.:

Machinists' Center 40%

Tinner's: Solid, 50%; Prick 50%

Morrill's Nos. 1AA, 1A, 1B, 1C, 1D, \$15.00

Hercules, 1 die, each \$5.00 50%

Niagara Hollow Punches 40%

Niagara Solid Punches 55¢10%

Tinner's Hollow, P. S. & W. Co. 40%

Tinner's Solid, P. S. & W. Co. 40%

doz. \$1.44 40¢10%

Rail—Barn Door, &c.—

Sliding Door, Painted Iron, 2¢25¢

Sliding Door, Wrought Brass, 1 1/2 in., 1 lb., 36¢ 30%

Cronk's:

Double Braced Steel

Sausage Stuffers or FillersSee **Stuffers or Fillers, Sausage.****Saw Frames—**See **Frames, Saw.****Saw Sets—See Sets, Saw.****Saw Tools—See Tools, Saw.****Saws—**

| | |
|---|----------|
| Atkins: | |
| Circular..... | 45% |
| Band..... | 50@50.10 |
| Butcher Saws..... | 50 |
| Cross Cuts..... | 35 |
| One-Man Cross Cut..... | 40 |
| Narrow Cross Cut..... | 50 |
| Hand, Rip and Panel..... | 35.50 |
| Miter Box and Compass..... | 40 |
| Mulay, Mill and Drag..... | 45 |
| Wood Saws..... | 40.10 |
| Chapin-Stephens Co.: | |
| Turning Saws and Frames..... | 30@30.10 |
| Diamond Saw & Stamping Works: | |
| Sterling Kitchen Saws..... | 30@10.10 |
| Diston's: | |
| Circular, Solid and Ins'ted Tooth..... | 50 |
| Band, 2 to 18 in. wide..... | 60 |
| Band, 1/4 to 1 1/2..... | 60 |
| Crosscuts..... | 45 |
| Narrow Crosscuts..... | 50 |
| Mulay, Mill and Drag..... | 45 |
| Framed Woodsaws..... | 25 |
| Woodsaw Blades..... | 25 |
| Woodsaw Rods, Tinned..... | 15 |
| Hand Saws, Nos. 12, 96, 9, 16, 4100, 148, 120, 76, 77, 8, 30..... | 35 |
| Hand Saws, Nos. 7, 107, 107 1/2, 3, 9, 90, Combination..... | 30 |
| Compass, Key Hole, &c..... | 25 |
| Butcher Saws and Blades..... | 30 |
| C. E. Jennings & Co.'s: | |
| Back Saws..... | 16% |
| Butcher Saws..... | 25.75 |
| Compass and Key Hole..... | 33.45 |
| Framed Wood Saws..... | 25.75 |
| Hand Saws..... | 12% |
| Wood Saw Blades..... | 33.75 |
| Millers Falls: | |
| Butcher Saws..... | 15.10 |
| Star Saw Blades Cross Cut Saws..... | 15.10 |
| Massachusetts Saw Works: | |
| Victor Kitchen Saws..... | 40.10 |
| Butcher Saws Blades..... | 35.40 |
| Peace & Richardson's Hand Saws..... | 30 |
| Simonds: | |
| Circular Saws..... | 45% |
| Crecent Ground Cross Cut Saws..... | 30 |
| One-Man Cross Cuts..... | 40.10 |
| Gang Mill, Mulay and Drag Saws..... | 45 |
| Band Saws..... | 50 |
| Back Saws..... | 25@25.75 |
| Butcher Saws..... | 35@35.75 |
| Hand Saws..... | 25@25.75 |
| Hand Saws, Bay State Brand..... | 45 |
| Compass, Key Hole, &c..... | 25.75 |
| Wood Saws..... | 40.75 |
| Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws..... | 50% |

Hack Saw Blades and Frames—

| | |
|--|-------------------------------------|
| Atkins' Hack Saw Blades A & A..... | 25% |
| Diston's: | |
| Adjustable Blades..... | 25 |
| Keystone Blades..... | 35 |
| Hack Saw Frames..... | 30 |
| Simonds..... | 25% |
| Culley..... | 12.25 |
| C. E. Jennings & Co.'s: | |
| Hack Saw Frames, Nos. 175, 180..... | 40.75 |
| Hack Saws, Nos. 175, 180, complete..... | 40.75 |
| Goodell's Hack Saw Blades..... | 40.10 |
| Griffin's Hack Saw Frames..... | 35.50 |
| Griffin's Hack Saw Blades..... | 35.50 |
| Star Hack Saws and Blades..... | 15.10 |
| Sterling Hack Saw Blades..... | 30.10 |
| Sterling Hack Saw Frames..... | 30.10 |
| Sterling Power Hack Saw Machines..... | each No. 1, \$25.00; No. 2, \$30.00 |
| Victor Hack Saw Blades..... | 20 |
| Victor Hack Saw Frames..... | 40 |
| Whitaker Mfg. Co.: | |
| National Hand Blades, Hand Frames, Power Blades..... | 40% |

Scroll—

| | |
|---|-------|
| Barnes, No. 1, \$15..... | 25% |
| Barnes' Scroll Saw Blades..... | 40% |
| Barnes' Velocipede Power Scroll Saw, without boring attachment..... | 40 |
| with boring attachment..... | 50 |
| Lester, complete..... | 15.10 |
| Rogers, complete..... | 15.10 |

Scales—

| | |
|---------------------------------|-----------------|
| Union Platform, Plain..... | \$2.10 @ \$2.50 |
| Union Platform, Stpd..... | \$2.50 @ \$2.50 |
| Chattillon's: | |
| Eureka..... | 25% |
| Favorite..... | 50 |
| Grocers' Trip Scales..... | 50 |
| The Standard Portables..... | 40 |
| The Standard R. R. and Wag..... | 40 |

Scrapers—

| | |
|-------------------------------|----------------------|
| Box, 1 Handle..... | doz. \$1.80 @ \$2.10 |
| Box, 2 Handle..... | doz. \$2.35 @ \$2.50 |
| Ship, Light..... | \$2.00 |
| Ship, Heavy..... | \$1.50 |
| Chapin-Stephens Co., Box..... | 30@30.10 |
| Richards Mfg. Co., Foot..... | 60 |

Screws—Bench and Hand

| | |
|---|------------|
| Bench, Iron, doz., 1 in., \$2.50 @ 2.75; 1 1/2, \$3.00 @ 3.25; 1 3/4, \$3.50 @ 3.75 | |
| Bench, Wood..... | 80 @ 80.10 |
| Hand, Wood..... | 70 @ 70.10 |
| Chapin-Stephens Co., Hand..... | 70 @ 70.10 |

| | |
|---|------------|
| Coach, Lag and Hand Rail—Lag, Cone Point..... | 80 @ 80.10 |
| Coach, Gimlet Point..... | 80.65 |
| Hand Roll..... | 70 @ 70.10 |

Jack Screws—

| | |
|-----------------------|------------|
| Standard List..... | 70 @ 70.10 |
| Millers Falls..... | 50 @ 50.10 |
| Swett Iron Works..... | 70 @ 70.10 |

Machine—

Cut Tread, Iron, Brass or Bronze:

| | |
|--|------------|
| Flat Head or Round Head..... | 50 @ 50.10 |
| Fuller Head..... | 40 @ 40.10 |
| Rolled Thread, F. H. or R. H..... | 75 @ 75.10 |
| Iron..... | 75 @ 75.10 |
| F. H. or R. H., Brass, Nos. 8 to 14..... | 65 @ 65.10 |

Set and Cap—

| | |
|---|------------|
| Set (Iron)..... | 75 @ 75.10 |
| Set (Steel), net advance over Iron..... | 25 |
| Sq. Hd. Cap..... | 70 @ 70.10 |
| Hex. Hd. Cap..... | 70 @ 70.10 |
| Rd. Hd. Cap..... | 50 @ 50.10 |
| Fuller Hd. Cap..... | 60 @ 60.10 |

Wood—

List July 23, 1909.

| | |
|-------------------------|---------|
| Flat Head, Iron..... | 87.45 @ |
| Round Head, Iron..... | 85.45 @ |
| Flat Head, Brass..... | 80.45 @ |
| Round Head, Brass..... | 77.45 @ |
| Flat Head, Bronze..... | 75.45 @ |
| Round Head, Bronze..... | 72.45 @ |
| Drive Screws..... | 87.45 @ |

Scroll Saws—See **Saws, Scroll.****Scythes—**

| | |
|--|-----------------|
| Plain Grass, Cutting Edge Polished..... | \$6.25 @ \$6.50 |
| Clipper, Bronzed Web..... | \$6.50 @ \$6.75 |
| Solid Steel, Web and Backs Polished..... | \$7.00 @ \$7.25 |
| Bush, Weed and Bramble, Painted..... | \$6.50 @ \$6.75 |
| Grain, Painted, Cutting Edge Polished..... | \$8.25 @ \$8.50 |
| Clipper Grain, Bronze Web..... | \$8.50 @ \$8.75 |

Seeders, Raisin—

| | |
|-----------------|----------|
| Enterprise..... | 25 @ 30% |
|-----------------|----------|

Sets—Awl and Tool—

| | |
|---|----------|
| Fray's Tool Handles, Nos. 1, \$12; 2, \$16; 3, \$12..... | 30% |
| Millers Falls Adj. Tool Handles, No. 1, \$12; No. 4, \$12; No. 5, \$13..... | 20 @ 10% |

Garden Tool Sets—

| | |
|--|--------|
| American Fork & Hoe Co., 9 doz. sets, No. 3 P F..... | \$7.25 |
|--|--------|

Sets, Nail—

| | |
|---------------------------------|----------------------|
| Octagon..... | pro. \$3.50 @ \$3.75 |
| Buck Bros..... | 27.4% |
| Elmore Tool Mfg. Co..... | 30% |
| Mayhew's..... | pro. \$9.00 |
| Snell's Corrugated, Cup Pt..... | 40.10 |
| Snell's Knurled, Cup Pt..... | 40.10 |
| Victor Knurled, Cup Pt..... | pro. \$7.50 |

Rivet—

| | |
|-------------------|------------|
| Regular List..... | 75 @ 75.10 |
|-------------------|------------|

Saw—

| | |
|---|-------------|
| Atkins: | |
| Criterion..... | 40% |
| Adjustable..... | 40% |
| Diston's Star, Monarch and Triumph..... | 30% |
| Morrill's No. 1..... | \$15.90 |
| Nos. 3 and 4, Cross Cut..... | \$20.60 |
| No. 25, Mill..... | \$30.00 |
| No. 16, 1, 95..... | \$15.00 |
| No. 1 Old Style..... | \$16.25 |
| Special..... | \$16.25 |
| Giant Royal Cross Cut..... | pro. \$7.50 |
| Royal, Hand..... | pro. \$4.50 |
| Waltham Positive..... | pro. \$6.75 |

Shaving—

| | |
|-------------------------------|-------------------------|
| Fox Shaving Sets, No. 30..... | pro. doz., net, \$24.00 |
| Smith & Hemenway Co.'s..... | 75% |

Sharpeners, Knife—

| | |
|------------------------------------|-------------------|
| Pike Mfg. Co.: | |
| Fast Cut Pocket Knife..... | \$1.50 |
| Mounted Kitchen Sand Stone..... | pro. doz., \$1.50 |
| Natural Grit, Carving Knife..... | pro. doz., \$3.00 |
| Quick Cut Emery Carving Knife..... | pro. doz., \$1.50 |
| Quick Edge Pocket Knife..... | pro. doz., \$2.50 |

Skate—

| | |
|-----------------------------------|-----|
| Smith & Hemenway Co., Eureka..... | 50% |
|-----------------------------------|-----|

Shaves, Spoke—

| | |
|-------------------------------------|--------------------------------|
| Iron..... | doz. \$1.25 |
| Wood..... | doz. \$2.00 |
| Bailey's (Stanley R. & L. Co.)..... | 45% |
| Chapin-Stephens Co..... | 30 @ 30.10 |
| Goodell's..... | pro. doz., \$9.00.....15 @ 10% |

Shears—

| | |
|---|--------------------------|
| Best..... | 7 8 9 in. |
| Best..... | \$16.00 18.00 20.00 pro. |
| Good..... | \$13.00 15.00 17.00 pro. |
| Cheap..... | \$5.00 6.00 7.00 pro. |
| Straight Trimmers, &c..... | |
| Best quality Jap..... | 70 @ 70.10 |
| Best quality Nickel..... | 60 @ 60.10 |
| Tailors' Shears..... | 40 @ 40.10 |
| Acme Cast Shears..... | 10 @ 10.10 |
| Columbian Cutlery Co.: | |
| Sheep, 1900 list..... | 30 @ 30.10 |
| Grass..... | 50 @ 50.10 |
| Horse or Mule..... | 50 @ 50.10 |
| W. H. Compton Shear Co.: | |
| Japan Handles, Nickel Blades..... | 60 @ 60.10 |
| Full Nickel..... | 50 @ 50.10 |
| Heinrich's Tailor's Shears..... | 10% |
| National Cutlery Co.'s Nickel Plated..... | 60 @ 60.10 |
| 60 @ 10%; Japan Handles..... | 70 @ 70.10 |
| J. Wiss & Sons Co.: | |
| Best Quality Jap'd..... | 60 @ 60.10 |
| Best Quality Nickel'd..... | 50 @ 50.10 |
| Tailors'..... | 25% |

Tinners' Snips—

| | |
|--|------------|
| Steel Blades..... | 80 @ 80.10 |
| Steel Laid Blades..... | 50 @ 50.10 |
| Acme Cast Snips..... | 40 @ 40.10 |
| W. H. Compton Shear Co., Forged Steel Handles..... | 35% |

| | |
|---|------------|
| Forged Handles, Steel Blades, Berlin..... | 60% |
| Heinrich's Snips..... | 40% |
| Jennings & Griffin Mfg. Co.'s 6 1/2 to 10 in..... | 35 @ 35.10 |
| National Cutlery Co.'s Forged Steel..... | 60% |
| Niagara Snips..... | 40% |
| P. S. & W. Forged Handles..... | 25% |
| W. R. W..... | 50% |
| J. Wiss & Sons Co.: | |
| Wiss Forged Steel..... | 25% |

Pruning Shears—

| | |
|--|-----------------|
| W. H. Compton Shear Co., Dropped Forged Steel..... | 35% |
| Cronk's Hand Shears..... | 33 1/2% |
| Cronk's Wood Handle Shears..... | 33 1/2% |
| Diston's Combined Pruning Hook and Saw..... | \$18.30.....25% |
| Diston's Pruning Hook only..... | 25% |
| doz., \$12.00..... | 25% |
| J. T. Henry Mfg. Co.: | |
| Pruning Shears, all grades..... | 40% |
| P. S. & W. Co..... | 40 @ 10% |
| Columbian Cutlery Co.: | |
| Fledge, Wilcut Brand..... | 60 @ 10% |
| Lawn and Border, Wilcut Brand..... | 60 @ 10% |

Sheaves—Sliding Door—

| | |
|-------------------|-----|
| Reading list..... | 40% |
| R. & E. list..... | 15% |

Sliding Shutter—

| | |
|-------------------|-----|
| Reading list..... | 40% |
| R. & E. list..... | 15% |

Shells—Shells, Empty—

| | |
|--|--------|
| Brass Shells, Empty: | |
| Climax, 10 and 12 gauge..... | 60.45% |
| Club, Rival, 65.5%; First Quality..... | 60.45% |

Paper Shells, Empty—

| | |
|---|----------|
| New Rapid, 10, 12, 16 and 20 gauge..... | 25 @ 10% |
| Climax, 10 and 12 gauge; Acme and Magic, 10, 12, 16 and 20 gauge; Ideal, 10, 12, 16 and 20 gauge; Leader grade..... | 25.45% |
| Union, League, 10 and 12 gauge, Rival grade..... | 25% |
| New Climax, Defiance, 10, 12, 14, 16 and 20 gauge; Climax, 14, 16 and 20 gauge..... | 20% |
| Challenge, Monarch, 10, 12, 16 and 20 gauge; League, Union, 14, 16 and 20 gauge; Repeater Grade..... | 20% |

Shells, Loaded—

| | |
|---|---------------|
| Loaded with Black Powder..... | 40% |
| Loaded with Smokeless Powder, medium grade..... | 40.65% |
| Loaded with Smokeless Powder, high grade..... | 40.60 @ 10% |
| Union Metallic Cartridge Co.: | |
| New Club Black Powders..... | 40% |
| Nitro-Club, Smokeless Powders..... | 40.45% |
| Arrow, Smokeless Powders..... | 40 @ 10 @ 10% |
| Winchester: | |
| Smokeless Repeater Grade..... | 40.45% |
| Smokeless Leader Grade..... | 40 @ 10 @ 10% |
| Black Powder..... | 40% |

Shingles, Metal—Per Sq.

| | |
|---------------------------|---------------|
| Edwards Mfg. Co.: | |
| Painted..... | Galv. |
| 14 x 20..... | \$4.25 \$6.00 |
| 10 x 14..... | 4.50 6.25 |
| 7 x 10..... | 4.75 6.50 |
| Wheeling Corrugating Co.: | |
| Dixie, 14 x 20 in..... | \$4.05 \$5.05 |
| Dixie, 10 x 14 in..... | 4.25 5.45 |
| Dixie, 7 x 10 in..... | 5.35 6.70 |

Shoes, Horse, Mule, &c.—

| | |
|--------------------------|----------------|
| P. O. Pittsburgh: | |
| Iron..... | per keg \$1.10 |
| Steel..... | per keg \$1.45 |
| Burden's, all sizes..... | per keg \$3.90 |

Shot—

| | |
|-------------------------|--------|
| Drop, up to B..... | \$1.70 |
| Drop, B and larger..... | 1.95 |
| Buck..... | 1.95 |
| Chilled..... | 1.95 |
| Dust..... | 2.30 |

Shovels and Spades—

| | |
|------------------------|-----------------------|
| Association List..... | 40 @ 7 1/2 @ 10 @ 10% |
| Avery Stamping Co..... | 40% |

Snow Shovels—

| | |
|------------------------------|-----------------|
| Long Handle..... | \$2.50 @ \$2.75 |
| Wood and Mail, D Handle..... | \$2.65 @ \$2.90 |

Sieves and Sifters—

| | |
|--------------------------------|---------|
| Hunter's Imitation, gro..... | \$9.50 |
| Hunter's Genuine, per gro..... | \$12.00 |

Sifters, Ash—

| | |
|---|---------|
| Acme Ball Bearing Sales Co., Acme Automatic Ash Sifter, each..... | \$3.25 |
| pro. doz..... | \$39.00 |

Sieves, Seamless Metallic—

| | |
|------------------|-----------------------|
| Mesh..... | 1 1/2 16 18 20 |
| Iron Wire..... | \$1.05 1.05 1.10 1.20 |
| Tinned Wire..... | \$1.15 1.15 1.20 1.30 |

Sieves, Wooden Rim—

| | |
|---------------------------------|----------------------|
| Nested, 10, 11 and 12 inch..... | |
| Mesh 18, Nested..... | doz. \$9.90 @ 9.95 |
| Mesh 20, Nested..... | doz. \$11.00 @ 11.05 |
| Mesh 24, Nested..... | doz. \$11.90 @ 11.95 |

Sinks, Cast Iron—

| | |
|-----------------------------|-----|
| Painted, Standard List: | |
| 12 x 12 to 22 x 36 in..... | 60% |
| 20 x 24 to 24 x 50 in..... | 50% |
| 24 x 60 to 24 x 120 in..... | 30% |
| Barnes' low list..... | 60% |

NOTE—There is not uniformity in lists used by jobbers.

Skains, Wagon—

| | |
|----------------|------------|
| Cast Iron..... | 70 @ 70.10 |
| Steel..... | 75 @ 75.10 |

Slates, School—

| | |
|-------------------------------|------------|
| Factory Shipments..... | 30 @ 30.10 |
| "D" Slates..... | 50 @ 50.10 |
| Eureka, Unexcelled Noles..... | 60 @ 60.10 |
| Victor A, Noiseless..... | 60 @ 60.10 |

Slaw Cutters—See Cutters.**Snaps, Harness—**

| | |
|---|------------|
| German..... | 40 @ 40.10 |
| Covert Mfg. Co.: | |
| Derby, 25%; Yankee, 30 & 2%; Yankee Roller, 30 & 2%; High Grade, 40%; Trojan..... | 40% |
| Jockey..... | 25% |

Snaths—

| | |
|-------------------|------------|
| Grass Scythe..... | 50 @ 50.45 |
|-------------------|------------|

Snips, Tinners—See Shears.**Spoons and Forks—****Silver Plated—**

| | |
|-------------------|-----------|
| Good Quality..... | 50 @ 10 @ |
|-------------------|-----------|

CURRENT METAL PRICES.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

IRON AND STEEL— Bar Iron from store—

| | |
|---|--------------|
| Refined Iron: | |
| 1 to 1½ in. round and square..... | per lb 1.80¢ |
| 1½ to 4 in. x ½ to 1 in..... | per lb 2.00¢ |
| 1½ to 4 in. x ½ to 5-16..... | per lb 2.00¢ |
| Rods—½ and 11-16 round and square..... | per lb 2.00¢ |
| Angles: | |
| 3 in. x ½ in. and larger..... | Cts 2.00¢ |
| 3 in. x 3-16 in. and ½ in..... | 2.15¢ |
| 1½ to 2½ in. x ½ in..... | 1.95¢ |
| 1½ to 2½ in. x 3-16 in. and thicker..... | 1.95¢ |
| 1 to 1½ in. x 3-16 in..... | 2.00¢ |
| ¾ x ¾ in..... | 2.15¢ |
| ¾ x ¾ in..... | 2.25¢ |
| ¾ x ¾ in..... | 3.30¢ |
| ¾ x 3-16 in..... | 3.80¢ |
| Tees: | |
| 1 in..... | 2.25¢ |
| 1½ in..... | 2.05¢ |
| 1½ to 2½ in..... | 1.95¢ |
| 3 in. and larger..... | 2.10¢ |
| Beams: | |
| Channels, 3 in. and larger..... | 2.10¢ |
| Bands—1½ to 6 x 3-16 to No. 8..... | 3.15¢ |
| "Burden's Best" Iron, base price..... | 3.15¢ |
| Burden's "H. B. & S." Iron, base price..... | 2.95¢ |
| Norway Bars..... | 3.30¢ |

Merchant Steel from Store—

| | |
|--|--------------|
| Bessemer Machinery..... | per lb 1.80¢ |
| Toe Calk, Tire and Sleigh Shoe..... | 2.50¢@3.00¢ |
| Best Cast Steel, base price in small lots..... | 7¢ |

Sheets from Store—

| | |
|--------------------|--------------|
| Black | |
| One Pass, C.R. | R. G. |
| Soft Steel. | Cleaned. |
| No. 16..... | per lb 2.30¢ |
| No. 18 to 24..... | per lb 2.35¢ |
| No. 22 and 24..... | per lb 2.40¢ |
| No. 26..... | per lb 2.95¢ |
| No. 28..... | per lb 3.10¢ |

Russia, Planished, &c.

| | |
|--|---------------------------|
| Genuine Russia, according to assortment..... | per lb 11½¢@14½¢ |
| Patent Planished, W. Dewees Wood..... | per lb A, 10¢; B, 9¢ net. |

Galvanized.

| | |
|--|--------------|
| No. 14 to 16..... | per lb 2.90¢ |
| No. 22 to 24..... | per lb 3.30¢ |
| No. 26..... | per lb 3.50¢ |
| No. 28..... | per lb 4.00¢ |
| No. 20 and lighter 36 inches wide, 25¢ higher. | |

Genuine Iron Sheets— Galvanized.

| | |
|--------------------|--------------|
| No. 22 and 24..... | per lb 5.75¢ |
| No. 26..... | per lb 6.25¢ |
| No. 28..... | per lb 7.25¢ |

Corrugated Roofing—

| | | |
|------------------------|------------------------|--------|
| 2½ in. corrugated..... | Paint'd | Galvd. |
| No. 24..... | per 100 sq. ft. \$3.80 | 4.75 |
| No. 26..... | per 100 sq. ft. 2.90 | 3.95 |
| No. 28..... | per 100 sq. ft. 2.55 | 3.70 |

Tin Plates—

American Charcoal Plates (per box.)

| | |
|--------------------------|---------------|
| "A. A. A." Charcoal..... | per lb \$6.15 |
| IC, 14 x 20..... | 7.40 |
| IX, 14 x 20..... | |

A. Charcoal:

| | |
|------------------|---------------|
| IC, 14 x 20..... | per lb \$5.20 |
| IX, 14 x 20..... | 6.30 |

American Coke Plates—Bessemer—

| | |
|------------------|---------------|
| IC, 14 x 20..... | per lb \$4.20 |
| IX, 14 x 20..... | 5.30 |

American Terne Plates—

| | |
|--|---------------|
| IC, 20 x 28 with an 8 lb. coating..... | per lb \$8.10 |
| IX, 20 x 28 with an 8 lb. coating..... | 10.00 |

Seamless Brass Tubes—

| | |
|----------------------------|----------------|
| List December 4, 1908..... | Base price 19¢ |
|----------------------------|----------------|

Brass Tubes, Iron Pipe Sizes—

| | |
|----------------------------|----------------|
| List December 4, 1908..... | Base price 19¢ |
|----------------------------|----------------|

Copper Tubes—

| | |
|----------------------------|----------------|
| List December 4, 1908..... | Base price 23¢ |
|----------------------------|----------------|

Brazed Brass Tubes—

| | |
|--------------------------|-------------|
| List August 1, 1908..... | 20½¢ per lb |
|--------------------------|-------------|

High Brass Rods—

| | |
|--------------------------|-------------|
| List August 1, 1908..... | 14½¢ per lb |
|--------------------------|-------------|

Roll and Sheet Brass—

| | |
|--------------------------|-------------|
| List August 1, 1908..... | 14½¢ per lb |
|--------------------------|-------------|

Brass Wire—

| | |
|--------------------------|-------------|
| List August 1, 1908..... | 14½¢ per lb |
|--------------------------|-------------|

Copper Wire—

| | |
|-----------------|------------------------|
| Base Price..... | Carload lots mill 14½¢ |
|-----------------|------------------------|

METALS—

Tin—

| | |
|------------------|------------------|
| Straits Fig..... | per lb 80½¢@81¼¢ |
|------------------|------------------|

Copper—

| | |
|---|------------------|
| Lake Ingot..... | per lb 13¼¢@14¢ |
| Electrolytic..... | per lb 13¼¢@13½¢ |
| Casting..... | per lb 13¼¢@13½¢ |
| Sheet Copper Hot Rolled, 16 oz..... | per lb 18¢ |
| Sheet Copper Cold Rolled, 16 oz..... | per lb 19¢ |
| Sheet Copper Cold Rolled, 16 oz..... | per lb 18¢ |
| Sheet Copper Polished 20 in. wide and under, 1¢ advance over Cold Rolled..... | |
| Sheet Copper Polished over 20 in. wide, 2¢ advance over Cold Rolled..... | |
| Bottoms, Pits and Flats..... | per lb 21¢ basis |
| Planished Copper, 1¢ per lb more than Polished..... | |

Spelter—

| | |
|--------------|----------------|
| Western..... | per lb 5¼¢@5½¢ |
|--------------|----------------|

Zinc.

| | |
|---|--------------|
| No 2, base, casks, per lb 7.25¢ Open..... | per lb 7.75¢ |
|---|--------------|

Lead.

| | |
|-------------------|----------------|
| American Fig..... | per lb 4¼¢@4½¢ |
| Bar..... | per lb 5¼¢@5½¢ |

Solder.

| | |
|--------------------------|------------------|
| 1½ & 1½, guaranteed..... | per lb 20¢@20½¢ |
| No. 1..... | per lb 17¼¢@17½¢ |
| Refined..... | per lb 15¼¢@15½¢ |

Prices of solder indicated by private brand vary according to composition.

Antimony—

| | |
|-------------------|-------------|
| Cookson..... | per lb @10¢ |
| Halletts..... | per lb @9½¢ |
| Other Brands..... | per lb @9¢ |

Bismuth—

| | |
|-------------|-------------|
| Per lb..... | \$1.90@2.00 |
|-------------|-------------|

Aluminum—

| | |
|--|----------------|
| No. 1 Aluminum (guaranteed over 99½ pure), in ingot for remelting..... | per lb 34¢ |
| Rods & Wire..... | Base Price 34¢ |
| Sheets..... | Base Price 34¢ |

Old Metals.

Dealers' Purchasing Prices Paid in New York

| | |
|--------------------------------|----------------------|
| Copper, Heavy and Wire..... | per lb 10.00¢@10.50¢ |
| Copper, Light and Bottoms..... | per lb 9.25¢@9.50¢ |
| Brass, Heavy..... | per lb 7.50¢@7.50¢ |
| Heavy Machine Composition..... | per lb 9.50¢@10.00¢ |
| Clean Brass Turnings..... | per lb 6.75¢@7.00¢ |
| Composition Turnings..... | per lb 7.75¢@8.25¢ |
| Lead, Heavy..... | per lb @8.00¢ |
| Tea Lead..... | per lb @8.00¢ |
| Zinc Scrap..... | per lb @8.00¢ |

THE IRON AGE

The oldest paper in the world devoted to the interests of the Hardware, Iron, Machinery and Metal Trades, and a standard authority on all matters relating to those branches of industry.

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